FORESTRY

FRDA REPORT 042

FORESTRY OR AGRICULTURE: A CASE FOR DIVERSIFICATION

INFORMATION SEMINARS SPONSORED BY
CANADIAN FORESTRY SERVICE
VICTORIA, B.C.

FOREST RESOURCE DEVELOPMENT AGREEMENT

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FORESTRY OR AGRICULTURE: A CASE FOR DIVERSIFICATION

INFORMATION SEMINARS SPONSORED BY
CANADIAN FORESTRY SERVICE
VICTORIA, B.C.

PRESENTED BY: NORTHERN LIGHTS COLLEGE
April 29, 1988 - Dawson Creek, B.C.
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Hans Scholz, RPF
Project Manager

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INTRODUCTION

Good morning ladies and gentlemen. Welcome to the seminar:

FORESTRY OR AGRICULTURE: A CASE FOR DIVERSIFICATION

My name is Hans Scholz and I am chairing this seminar for Northern Lights College. The seminars are sponsored and funded by the Canadian Forestry Service, and Northern Lights College gratefully acknowledge their support.

Our Member of Parliament, the Hon. Frank Oberle, sincerely regrets that due to a previous commitment, he is unable to be present. Frank extends his warmest welcome to all participants attending the seminar.

Our Member of the Legislative Assembly, the Hon. Tony Brummet, also regrets that he is unable to be present. He believes that Forestry and Agriculture can have compatible and complementary uses.

The purpose of this seminar is to provide you with an opportunity to hear and meet a group of persons knowledgeable in coniferous and deciduous forest management and integrated land use.

We hope you find this information seminar a useful means of exploring trends in diversification of forestry and agriculture.

Charlie Lasser
Chairman, Board of Northern Lights College
Chetwynd, BC

(transcribed from oral presentation)

PERSONAL EXPERIENCES IN INTEGRATED FARMING AND RANCHING

It is with great pleasure that I welcome everyone here on behalf of Northern Lights College and I hope you will get as much out of this seminar as I did yesterday. I really enjoyed the seminar yesterday in Dawson Creek and I found out a lot more. You know in this life we learn as we go, and I learned a lot yesterday. Hans has asked me if I would give the talk I gave yesterday as last speaker, first today. Sometimes it's an advantage to be the last speaker, but as I have other commitments he asked that I give my talk first. I'm not sure if it's because I did a good job, or because I did a lousy job and he wants to get rid of me for the rest of the day.

All of us have a few peculiarities. I do a lot of my writing early in the morning about three o'clock. I usually take an envelope and I cut it in half and then I write on it. I find I can do more in half an hour in the early morning than I can with half a day. My talk is on "crystal ball gazing, diversification in agriculture".

We had a small farm south of Cloverdale, in the Fraser Valley, and my dad was a war veteran. I quit school when I was just 15 years old and had a team of horses and started custom work. Those of you who have driven horses and tried at 15 to work a breaking plow or an ordinary plow, you'll know what problems you can have. From there we went and bought a farm in Pitt Meadows when I was 18 and I had my own truck and went trucking.

All my life I've always diversified in agriculture, because I've always expanded. You have to, you always have to do something else to make that extra dollar to keep going. As a result I've done everything including construction, we had our own trucking company, with portable crushers, and things of that nature.

I'll look ahead to try and see what's going to happen and give you a run down on how I feel.

First, I feel that grain prices will rise over the next few years if world weather changes come about. It's a pattern which has been established since 1802, showing 18 year cycles, which cause the price of grain to come down. The only trouble we have is the subsidies which some of the world countries have and which we sometimes have upsetting that cycle. If last year is an indication, it is the first year in which less grain was produced than was actually consumed.

Another big thing in agriculture is the current second industrial revolution. If you remember in your "going back to school days": The first industrial revolution came along and Ludd in England tried to go and break the first machine. Machines were supposed to be evil and would upset the world. What has happened with the micro chip is as much or more upsetting in the world,

and a bigger change than we had with the first industrial revolution. Forget everything that has happened in the '70s and the '60s. It's a new era now, things are entirely different, we're never going to go back like we were. So we need to get used to what the future's going to bring, and to adapt.

Those who can continue farming as they have in the past, that's great, but if you have a farm that's all paid for, and the machinery is paid for and you have five sons, you're going to have a problem in the future, or your sons are going to have problems. That's where the changes are going to come about.

Many farmers are going to have to look to another source of income. It might be other types of grain, with the warming of the earth that we have now. They can't take pictures of plants with satellite, but they can take pictures of the chlorophyll in plants and that is moving northward about five miles a year. This confirms the warming of the earth. We have to look at other types of grains that we can grow. We have to look at other places in the Peace River where irrigation could be used. We were going to try an experiment on irrigation in the spring. Usually in this country, as you know, in May and June, it's usually dry. However, the year I go to try irrigation, we get rain every couple of weeks.

I think there is a good market for hay crops in the interior and the Lower Mainland and I'll be going to New Brunswick within about three weeks and be looking at a baler back there that compresses three bales into a 28" bale that weighs about 110 lbs. This may make it feasible to ship hay down to the Lower Mainland. There is the possibility of hay, but you must have a hay shed for it. A hay shed is very cheap, but necessary, if we want to keep a market, we must ship good material down.

Another thing which we have to look at, and Bill Bickford will speak on it later this afternoon, is game farming: deer, reindeer, elk, buffalo, etc. We're going to have to look very seriously at that, because that will work in ideally with your forestry venture.

Fur farming is already here and it's another avenue.

With ranching ,the possibilities are unlimited if we want to supply the beef that is needed in BC and elsewhere. There is a market, and there will be a market for cattle in free trade with the States. Our cattle will not be sold in Ontario and Quebec in the future, it will be in California, which is the largest market on the continent.

In our northern areas, our cattle are bigger than they are down south. I think that's because of our weather, probably because the poor ones die off here in the winter. We raise good cattle here and I think we can be proud of that. The possibilities are good. Now how does this tie in with aspen?

Well, everyone of us have aspen on our place or the capabilities of growing aspen. As long as there is a market, and a profit to harvest it, there's a dollar in it. Now you can't take a hay crop off in the middle of winter, but we sure can take off logs in the middle of winter, pulp wood. I think we should look at that on a woodlot basis, to where we're going and take so many cords a year, on a self-sustaining yield. We're going to be looking at planting aspen at home, aspen which we can harvest in approximately 15 years plus. I think some of the speakers will enlighten everyone, as I was enlightened yesterday, of the plantation and growth that is possible.

I look at it this way: If I have to look at putting in softwood, that I can maybe market in 75 years, I'm not going to bother. I will do something else with it because it is of no value to me whatsoever, but if I can harvest something in fifteen years, I hope I'm young enough that I can still take one or two cuts off. So I can see that, everyone of us is just the same, if we can see something in fifteen years, we'll go for it. That's why I'm so enthused over aspen and the possibilities.

The future of aspen is very bright, we'll have pulp mills in Chetwynd, Taylor, and Fort Nelson. We'll have waferboard plants in Chetwynd, Dawson Creek, Taylor, and Fort Nelson. We'll also have a lot of other things besides that. We have to start utilizing all the wood. We don't want to leave anything in the bush. Anything we leave in the bush is an absolute waste. We can high-grade, the first grade we might use for something like chop sticks, the price is usually about 50% more than is paid for ordinary pulpwood. Next would be pulp wood, because there would be no stain or rot, a good grade. The next would be waferboard, which can take stain and some rot. The balance could be used for other products.

There is a possibility that we could use everything except the leaves. Eighty percent of the nutrients are in the leaves, so you want to leave the nutrients for the next crop. There is no reason to have any waste whatsoever in the future. The oversize could either be used for cants to be exported, but they also could be used for furniture wood, dowel pins and things like that. There are also many other uses for poplar.

Even in softwoods, MacMillan Bloedl have a plant down on the Mainland where they chip everything and they put it in a machine and it comes out. If you want a 4 x 12 that's 80 feet long, you can get it. It will be stronger than steel and fire resistant. What they want is fibre, and this is the thing of the future. These are some of the uses I can see of the future.

We have to start utilizing our bush with cattle. I feel that in straight grain farming you are wasting at least some of your product. We don't have crop insurance, we took it out last year as most people did. I feel that crop insurance is an absolute waste cause I have no worry about losing anything as long as I have cattle. My cattle can go in and pick up anything that's on the ground. If it won't ripen up or it's wet, I can put it to silage. Now the same thing with hay, if I have hay and it rains on it--rain never spoils hay--it's the mold that occurs when the sun comes out that causes hay to go bad. So if we have hay that we rake or bale, and it rains on it, we take and chop it up and put it in the silo and take some green grass and put it on top and you've got number 1 silage. In fact, I've taken straw and filled the silo with as much as we could blow in, and put that green grass on top of it, and let the juices from the grass go down through the straw in the winter. When you take that straw out, the cows don't know the difference, it's good feed.

We pasture off our hay fields, we pasture off grain fields, so there is no waste. We didn't start feeding any hay until the 29th of December last winter. And by the end of February, they were out in the fields again and we only feed about one-third of the hay that they would ordinarily get. That was all free pasture as far as I'm concerned.

We don't calve out in winter, we summer calve. I don't work against the weather, I work with the weather. We never give the calves any shots, they

never have any problems like with spring calving. They calve out normal in summer, we keep the calves on, we just finished weaning. We don't have any problem with frozen teats. I've been asked if you have the calves out, don't they take the cow down? Well, if you look at early spring calving, it's a lot better to have a calf on the outside taking some of the milk, than to have a calf on the inside that's taking everything. Before we went into it, we went down to see someone else who had been doing it for ten years and we picked his brains first to see what problems we might have. Our calves will be on a little bit of grain, and they go out on pasture in thirty days. They'll be coming off the pasture and they will sell anytime over the next nine months. This last year we sold them at the last sale just before Christmas and they weighed just about as much as a spring calf, and it's a lot cheaper carrying them that way.

Also, we are looking at finishing our calves right off because we don't use any fertilizer or any sprays. We are looking at selling beef to a market that wants beef which has not been subjected to any fertilizers, or sprays, or anything else. We had a fellow from Quesnel come and buy some grain from us, as he did not want any additives. He had a bull that died. The autopsy report said that the animal starved to death. His stomach was full of hay and the manger was full of hay. Apparently there was an additive on the hay to prevent molding, it had been applied too strongly and it killed the bacteria in the bull's stomach, so he couldn't digest the hay.

If you have cattle, you have to exercise special care with aspen management. I find that our cattle clean up our fields and keep the brush down. It's been checked on tests, that brush up until August will give as much food value as your best grass will, if you don't keep them on straight bush. We move our cattle from field to field, we have cultivated pastures with bush in them and we let them eat it down.

The reason we keep our cattle in one large area, is because they only take what they want to take and therefore your weeds will keep on growing. Pretty soon you will wonder why you only have weeds left because they are the ones which are always producing.

Our pastures which were constantly in clover before we bought the place, at least 20 years, are as good as the day they were planted. Every 4 or 5 years, I let it go to seed. I use the winter pasture but I also let the cattle in there to tramp down the ground. I don't have to go out and reseed it. The cattle push the seeds into the earth for me.

Through a fluke, we found another thing out when we seeded a rough area along the contours of the land. We seeded with a helicopter, and couldn't work it down as well but it grew very well. When we had those dry years, three years ago this summer, the grass was about so tall, and about that tall in the pastures. And each place had held the moisture so it didn't run off. So in the States they call it "imprinting", that is, putting marks in the ground so that water can run into the marks and not off the land. They found that the buffalo did this before the farmers came.

We now go in and smooth everything off and we wonder why we don't get the crops. So, a lot of these things you fluke onto in farming and I think everyone of us has thought we were doing something stupid and then it works out. So I can see that there is the future of farming with mixed farming and I think we will be doing a lot more of that as time goes by.

I think that is about all I have to say about going ahead and exploring other avenues.

We repair our own machines, 930 Cases, no big machinery, but mind you, when they pull the hay, they can do just as well as a 30 thousand dollar tractor. We have had them now for a long time and we have had one in use since the auction sale and we pulled the motor down and there is no ridge on it whatsoever. All we had to do was re-ring it. We cannibalize one tractor so our parts cost are very low. I would say about a few thousand dollars for parts.

Our combines are two old combines, old Cockshutt 542's. They go back into the sixties. We go over them and keep a good set of bearings on hand . They don't throw over the back end if you watch it and they cost less money than a new one.

All these things will have to be looked at and, hopefully, we can adapt to the new ways to meet the needs of the future.

Eli Framst
Long-Time Farmer
Cecil Lake, BC

(transcribed from oral presentation)

A PERSONAL HISTORY OF FARMING IN THE PEACE

I have been asked to tell you a little of the history of farming in the Peace River country. I can do this only on a personal level, relating the history of our farm from when my parents arrived in the Cecil Lake area in May 1930.

WHY THE PEACE?

In the late 20's and early thirties, the papers were full of this wondrous place called the Peace River Block. The dust bowl on the prairies, the start of the Great Depression and the catastrophic drop in wheat prices sent a stream of people into this country, looking for a place to start over again. Coming from central B.C., we were an exception.

WHAT WE HAD.

Some carpenter tools, tie hacking equipment, 2 saddles, a pick and shovel, and 2 pitchforks.

Limited household furniture and very little money.

WHAT WE FACED

No transportation, no bridge, no roads, no school, no store. Heavy bush covered available surveyed land.

In Sept. 1931, the first Cecil Lake School opened with, my mother as teacher. Her monthly salary of $132.00 gave us the cash to buy much needed things for the farm.

In the winter of 1932, my father was killed in the bush. My mother decided to keep the farm going and was able to do so with a great deal of help from George who had come with us to the country (and became my stepfather several years later).

The first years we sold nothing. The cattle increased and all crops were fed. After the first load of wheat was sold for 38 cents a bushel, we decided to feed all grain to pigs and cattle. This was a good decision. Expenses were kept to a minimum by working off taxes by clearing and building roads, machinery bought was well used and eveners and single-trees were made from birch growing on the farm. I spent many hours each winter sewing harness and taking our logs (permit). All our foodstuff was raised on the farm. This included vegetables, dairy products (even cheddar cheese), meat, and jams and fruit from wild berries. My three sisters were dressed in clothes made by my Mother from flour sacks. Fortunately for them, the flour came in attractively printed flour sacks.

The 1940's saw the purchase of 2 more quarters ($600 each) and I acquired a wife, and in due time, a growing family.

Also in this decade, the change came from horses to tractors.

About this time the B.C. Government initiated the 4% farm improvement loans so I made use of the loans, each year clearing what I could get ready to seed the next year - usually seeding between the brush rows for a year or so. Then I became aware in the late fifties, that the Federal Government introduced the Farm Credit Corp. at 6% interest. I borrowed from them to purchase more land until we now owned 18 quarters.

The coming of the B.C. Rail made a big difference to us, for it cut the cost of hauling grain. We then had only about 12 miles to go instead of 60 to Dawson Creek and the freight was less to Vancouver.

In conclusion, farms have continued to grow and prosper as the philosophy and economics of farming have changed over the years. Farming was a way of life. Your farm work and local community activities were all you were involved in. You never expected to take holidays or travel to other countries, and we didn't need much money to operate. We personally never ever charged up living or operating expenses. No money, no buy!

Now, farming is a way to make a living. It is a business. It isn't easy - and it shouldn't be. You have to wear out a lot of pencils (or learn to use a computer) in order to make the right decisions for yourself and your farm. Statistics can be discouraging and misleading if taken too seriously. Before becoming too discouraged, look into other options to offset the ups and downs in world grain prices - and use your pencils. Have you considered grass seeds? a woodlot?

Continual handouts from governments never cure a problem. Farmers MUST accept the responsibility for the decisions they make just as any other successful businessman does. There is and will be an opportunity for younger people to enter into agriculture. If they sit down and work out a plan that satisfies their personal abilities.

Before anyone can be successful in agriculture they must have the DREAM!

LeVerne Merkel
Timber Officer
Ministry of Forests
Prince George, BC

HISTORY OF FORESTRY IN THE PEACE RIVER

Mr. Chairman, fellow speakers, ladies and gentlemen. I have been asked to provide some history of forestry in the Peace.

What I am going to do is review the history of forestry from several aspects. First, I will deal with the process of defining a land base upon which Forest Management would take place and the securing of this land base in such a manner as to provide the security upon which investment in growing trees is possible. Secondly, I would like to review the structure and growth of the industry and the employment it provides. Thirdly, I would like to review how the rate of harvest has grown.

The best point in time to start, for the purpose today, is in 1930 when the Peace River Block, a block of some 5,470 square miles, which the Province had conveyed to the Dominion in aid of railroad construction, was returned to the Province. In 1931 a permanent Ranger was appointed to take care of the Peace River Block. At that time it was suggested that certain lands in this area should be considered for designation as Forest Reserves. The significance of such a designation is that once so designated, land could not be alienated for any non-forestry purpose unless it was first taken out of reserve by Cabinet order. As you are probably aware, at this time "timber land" in the interior was defined as land containing 5,000 f.b.m. per acre and the sale of such land was prohibited. However, this land classification was administered by the Department of Lands and was not considered by many as adequate protection to prevent diversion to other uses.

At this time the industry was comprised of some 9 small portable sawmills and the total volume of timber consumed amounted to some 5,500,000 f.b.m., some in the form of ties which were delivered to Dawson Creek for $.34 each.

Typically these sawmills were very small and they operated intermittently. The lumber they produced was hauled into town where it was sold to planermills who further processed and sold the lumber to Eastern Canada and the U.S. market.

At this time timber was sold by timber sales based on demand with no restrictions on who could bid on these sales. I would now like to skip on to 1947 when, as a result of the 1945 report of Royal Commission Chief Justice Sloan, the Forest Act was amended. The result was that the concept of "sustained yield" was adopted and what we now know as Tree Farm Licences and Public Sustained Yield Units were born.

The industry in this area had shown continued growth since 1930. By 1950 there were some 73 small bush mills operating in the area producing 32.8 million f.b.m. per year. Employment in the sawmills and logging had grown to about 680 men of which only 252 were employed for 9 to 12 months of the year. As an aside you might be interested to know wages had also increased from the 40 to 50 cents per hour range to $1.10 to $1.35 per hour. It is noted that in that year an unprecedented increase in Timber Sale applications and what were called farmer operations occurred. This was attributed, in part, to a "near

crop failure" throughout the District.

During 1949 and 1950 considerable effort was expended constructing some 22 1/2 miles of fire guard at the junction of the Doig and Beaton Rivers and in the upper Deadhorse, Copeland, Martell and Cache Creek areas to protect these areas from settlers land clearing and grazing fires.

The concern over the use of the land base continued to be an issue and map reserves were applied for over five areas covering some 400 square miles. The reasons for these applications: "These areas are more suitable for purposes of growing and selling timber than for any other purpose and to let settlers into them would result in great losses by fire which would ultimately take place as witnessed in the past." The aim was to establish these areas as Provincial Forests for the Management as new public working circles, the forerunner of the public sustained yield units.

Over the next decade there were no significant changes. The industry continued to grow but its structure did not change in complexion. The concerns over security of land base on which to practice sustained yield and concerns over security of tenure continued. The next significant events did not take place until 1960 and 1961 when the Moberly and Blueberry Sustained Yield Units were established.

With the establishment of these units two objectives were realized. It was now possible to control the amount of timber which was sold and to regulate the rate of harvest under the individual licenses. The so-called "Quota System" had finally reached the Peace. As the P.S.Y.U.'s were established volumes were apportioned to established operators in the area based upon their performance over the previous 3 year period. In the Moberly volume was apportioned to 24 licenses while in the Blueberry volume was apportioned to 5.

After the establishment of P.S.Y.U.'s in this area a series of very fundamental changes in forest management and the industry began. The reasons are many but I would like to mention what I view as two of the major ones.

Once the P.S.Y.U.'s were established a trend of consolidation started as a result of the "quota" system. Due to the restricted bidding on timber sales and the fact that the "quota" went with the sale the number of established licenses decreased. For example, in the Moberly the number of licenses decreased from 24 in 1960 to 2 in 1970.

Another development which had a big impact in this area was the establishment of the pulp industry in Prince George which was supplied with raw material in the form of residual chips from sawmills.

The result was a shift from small portable or stationary mills in the bush to permanent sawmills located in town on rail and the inclusion of chipping facilities in the sawmills.

By 1970 the commitments had grown from 801,167m3 on an intermediate utilization basis to 1,316,000m, which included additional volumes the licencees received for converting the close utilization standards and the first commitments against what was called "Third Band" timber.

During the late sixties a new tenure system was introduced and by 1970 the conversion from Timber Sales to Timber Sale Harvesting Licences was well under

way. This new form of tenure provided for the submission of development plans which had to take into consideration other resource users as well as transferring the responsibility for reforestation to the licencees.

In 1970 the estimated number of men employed in logging was 295 and in milling 508. While the logging jobs were still very seasonal in nature most of the milling jobs provided year round employment. These trends in construction of larger more sophisticated sawmills, the conversion to close utilization standards and the distribution of "Third band" wood continued until 1979 when a new Forest Act was enacted.

This New Forest Act did introduce a lot of significant changes of which I will only mention a few.

The first change I want to mention is the concept of Timber Supply Areas. Rather than administer the rate of harvest on the basis of Public Sustained Yield Units, Timber Supply Areas were defined which contained more than one P.S.Y.U. The whole Peace River was included in one T.S.A. and an allowable annual cut for this area was set at 2,000,000m by the Chief Forester.

Once the Chief Forester had approved the new A.A.C. the Minister than apportioned this cut as follows:

Forest Licenses - 1,654,080
Timber Sale Licenses - 190
Small Business Enterprise Program - 270,000
Woodlot Program - 30,000
Forest Service Reserve - 45,730

Forest Licenses were a new form of licences designed to replace Timber Sale Harvesting Licenses. They are normally for a 15 year term they have what is called an "evergreen provision" in that they are replaced every five years with a new 15 year Forest Licence.

The Small Business Program is a program designed for non-quota holders. This volume is divided into two categories and timber sales are advertised for sale by either auction or sealed tender and any individual or company who is registered with the Regional Manager as a category 1 or category 2 registrant may bid. Category 1 being basically those people who do not own a sawmill and Category 2 is for those who do own a sawmill. These timber sales are for a specific area of timber, are short term in nature and carry no reforestation responsibilities.

Woodlots are a new form of tenure designed to encourage private forest management of Crown land and encourage Woodlot applicants to combine private land with crown land for the purpose of growing and harvesting trees. The maximum amount of Crown land that can be included in a woodlot is 400 hectars. This form of licence has a term of 15 years, is replaceable every 5 years with a new 15 year licence and carries with it the responsibility to reforest and manage the land according to a Management and Working plan.

In 1982 the old tenure system was replaced with the new tenures. Also at this time, after many years of discussion, all of the P.S.Y.U.'s in the Peace T.S.A. were made Provincial Forests.

The new Forest Act also provided for the possibility of converting Forest

Licences into a Tree Farm Licence. To date, public hearings in 1984, they have now received the Chief Forester's approval of their proposed Management and Working plan and later this year the Peace River area should have its first Tree Farm Licence.

The most recent development in the Peace is the development of Aspen as a merchantable species. As you are all probably aware a Pulpwood Agreement was issued to Louisiana-Pacific in 1986. Since then they have constructed a new Waferboard Plant in Dawson Creek. This licence was for 452,000m3 of Aspen which up until now was considered a weed species. Last year Fibreco commenced construction of a pulpmill at Taylor. Also, last year, the Minister advertised another pulpwood agreement for bid proposals to utilize Aspen in this area. Four proposals were received, one of which was subsequently withdrawn. Based upon these proposals the Minister has now made offers to the three applicants which if accepted would result in a chipping plant, two new pulpmills and waferboard plants in the Peace.

In conclusion you can see the Forest Industry in the Peace has seen continued growth over the past 50 some odd years. Indeed it is now experiencing unprecedented growth due to the utilization of the Aspen. This growth has resulted in an increase in A.A.C. from about 800,000m^3 when the area was first put on sustained yield to 3,100,000m^3, the new A.A.C. which was recently approved by the Chief Forester. The Forest Managers in this area have a big job in front of them to manage the lands available to them to sustain the projected level of harvest.

Wayne Thorp, RPF
Wood Procurement Forester
Louisiana-Pacific Panel Products Ltd.
Dawson Creek, BC

(transcribed from oral presentation of slide show)

INDUSTRIAL PERSPECTIVE: THE DECIDUOUS RESOURCE IN THE PEACE RIVER LAND DISTRICT

INTRODUCTION

Today, I was asked to speak about hardwoods from an industrial perspective.

I will be dicussing the hardwoods with respect to:

i) - value and distribution

ii) - hardwood management

iii) - hardwood harvesting

iv) - my personal views on the future of the hardwood resource in the Peace.

First when discussing hardwoods I'll deal with poplar only. The story of poplars, particularly in the Peace region is relatively new. The poplar has gone from a weed to a valuable resource virtually overnight.

Aspen (poplar) is one of the most widely distributed tree species in North America and just because it was not utilized as a wood fibre until recently it was still a valuable resource for: wildlife habitat, domestic range area, scenic beauty, recreational areas, and wind breaks but note that poplar is being utilized for waferboard, newsprint, chopsticks, furniture and plywood. Forest managers must start to manage poplar to meet all management objectives to best meet all resources as well as for timber production.

In order to manage any species of tree or even grass or livestock, you must have an understanding of the establishment stocking and growth requirements and then apply that knowledge to best meet the objective.

The most important thing to remember about poplar silviculture is that poplar does not regenerate the same way conifers do:

Here in the West, aspen reproduces almost exclusively by suckering, where a number of stems are produced from a parent root system. Suckers require direct sunlight to be initiated. They are produced when overstorey stems are removed or die. This causes a hormonal imbalance, which stimulates buds located just below the soil surface on lateral roots to sprout and grow.

Aspen does produce crops of viable seed, but they need bare mineral soil and a constant supply of moisture to germinate and survive. These conditions occur so rarely that, from a management standpoint, root suckering is the only practical way to regenerate aspen.

As a result of this vegetative regeneration a genetic individual is not a single stem as in conifers, but a group of identical stems, which are referred to as a clone.

Thus, an entire mountainside of aspen may contain only a few genetic individuals.

Although stems within a clone are genetically identical, clones can often be recognized from their neighbours by differences in autumn leaf color and variations in time of leaf flush in the spring. Within a stand, clonal boundaries can also be distinguished by careful observation of bark color, branching habit, stem form, suckering ability, and leaf texture. Such characteristics can be important; for instance cutting a clone with poor stem form will only result in another stand with the same characteristics but fortunately cutting a stand with good stem form will result in a stand with good stem form. While an individual tree in a clone may not live more than 100 to 150 years, the age of the clone to which it belongs could well date back several thousands of years.

Aspen is a sun loving species. It is very intolerant of shade, and taller stems will soon outgrow their neighbours. This restricts the development of shorter stems or those affected by disease giving aspen stands the ability to thin themselves over time. Aspen will not stagnate from overstocking like conifers.

Use of the existing mature root system also allows fast initial growth.

The regeneration of aspen ideally suits clearcut logging and even-aged management systems. Clearcutting which completely removes the existing overstorey will ensure suckering as well as eliminating the chance of residual stem infection caused by logging damage. Also where a stand is being managed for fibre such as in pulping, all non-merchantable stems and understorey saplings should also be cut to prevent poor quality residuals from releasing and dominating the new stand. The only departure from this is when the Fish and Wildlife Service requires nesting or perch trees for birds or shelter areas.

Partial cutting has several drawbacks: it does not maximize fibre production and in fact the resulting stand from uneven-aged management may even be unmanageable for fibre in the future. Residual stems left after harvest are likely to be damaged and become infected with disease, causing many to die.

This relative ease of establishment of hardwoods as described with current short logging methods lends itself to smaller operators and woodlot management.

Harvesting methods can be put at a scale so that the land owner can do it himself with low capital investment as compared to long logging.

Virtually any method of harvesting can be used and farm equipment is easily adapted. Horses, tractors, and even farm trucks can be used with farm plates, farm WCB and farm insurance, as short logs are considered a farm product when sold from your land. This makes hardwood management an ideal secondary farm income and opens the door to more farm woodlots.

SUMMARY

If ever there was a tree that could boast of being a "true champion" of multiple use, it would be poplar.

As previously mentioned it provides excellent wildlife habitat, domestic range area, excellent nurse crops for conifers, it heals quickly our scarred landscape, provides dazzling fall colors, and as a pioneering tree species it regenerates rapidly with short rotations.

The potential exists particularly in the Peace River area where we have approximately 1 million ha of agricultural land to change the past trends.

We have gone through three generations of land clearers where the only thing to do with our forests was to turn them into windrows and burn them up.

You must start to treat your forested land as an asset rather than a liability. We still have people harvesting their forested land with one thing in mind - to get rid of the trees in order to clear the land. Sometimes the land won't support good agriculture particularly in Class 4, 5, and 6 lands.

Rather than rely solely on single use of your land such as agriculture, consider carefully a variety of new ideas as presented earlier and new opportunities for integration of your land.

The potential is tremendous for hardwoods and softwoods for future increased values in forestry.

As the demand increases for any resource so does the value of that resource ... the demand obviously is going to increase as demonstrated in recent proposals for more processing facilities.

We have only started to realize the uses for hardwoods with pulpmills and waferboard plants. I can foresee value added plants following shortly, producing furniture stock, chopsticks, hardwood flooring and even cattle feed.

And if you produce through intensive management on your land a superior product, you will then realize higher returns in the future for some of these value added plants.

Studies carried out with hybrid poplar in Ontario with 15 year rotations and perhaps thinning will make poplar management a viable option for your land. We haven't reached some of this yet but it isn't that far off. Please plan for the future and consider this when managing your land.

Bob Clarke
Forestry Superintendent
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INDUSTRIAL PERSPECTIVE - CONIFEROUS SAWLOG PRODUCTION

The best way for me to illustrate the potential that exists for growing coniferous tree species (spruce and pine) as a commercial farm crop in the Peace region is to outline the market that exists for this wood. This can be done by showing you a comparison between the manufacturing capacity of the major sawmills in the area and the Allowable Annual Cuts (AAC) of the harvesting licences that these companies hold.

Table I is a listing of this information, subdivided by Timber Supply Area. The combined annual shortfall between sawmilling capacity and AAC is approximately 844,000 m3/year or 22,200 truckloads of logs.

To make up these shortfalls, the companies have to purchase timber from other sources. The primary source of purchased timber is the Small Business Enterprise Program and the Woodlot Licence program. These programs are administered by the Ministry of Forests and managed on a sustained yield basis.

Table II lists the approximate Allowable Annual Cut for these programs by Timber Supply Area. The combined volume available from these programs is 320,000 m3/year. Reducing the indicated sawmilling capacity shortfall by this amount still leaves a shortfall of 524,000 m3/year or 13,800 truckloads. This is a substantial amount of wood, nearly the requirements of one sawmill.

This indicated shortfall is what can be expected to occur in an average year at this time. Many other factors affect year to year variability in the amount of timber that is purchased, including:

- strikes
- timber salvage operations due to fire etc.
- cut control flexibility (and lack of it)
- lumber markets

The Ministry of Forests recently announced policy of reducing the Allowable Annual Cuts on all long term tenures in the province by 5 percent in order to increase the amount of wood sold on a competitive basis will not affect this number. It will simply transfer timber from the licence holders to the Small Business Program, as is shown in Table III.

Well now that we have identified the shortfall in timber supply, the big question is where is this large volume of wood going to come from?

In the past, this shortfall in timber supply was made up through purchasing private wood off new agricultural leases and farm woodlots. However these sources are rapidly drying up and in most cases the biggest areas are not being replaced with new forests.

I should also say at this time that the indicated shortfall has expanded

greatly in the last few years. This is primarily due to changing milling technology and pressure to increase productivity in order to reduce costs and stay competitive during the recession in the first half of the decade. It may not seem logical to increase manufacturing capacity without the timber supply to support the increase, but in most cases the increases were the aftereffect of other improvements and not conscious efforts to increase capacity. Also, the quest for efficiency in the short term was a condition of staying in business at that time, while the potential side effects were something to be dealt with in the future. This trend will not continue at as great a pace in the future, as the reality of future wood shortages is now here, and companies are concentrating on improving the value of the products they produce to remain competitive.

In order to obtain sufficient timber supplies to continue the rating at full capacity, companies are beginning to look at portions of the forest resource previously considered UNMARKETABLE, including aspen and what we call height class 2 stands. Height class 2 stands are those stands of mature timber that for one reason or another have not grown very tall and are between 11.0 and 19.8 metres in height (36 and 65 feet). In most cases they are short, dense, small diameter stands of Lodgepole pine or what I call "mountain spruce", which are those short limby high elevation spruce stands that you see in the mountains. Of course, there are limits to what you can make a 2x4 out of.

Although some aspen will likely be sawn into lumber, the extensive pulpwood agreements that have been offered over the Peace region will certainly limit the opportunity for expanding into this source of sawlogs.

None of this is very attractive stuff to sawmillers, but they will have to either consider using some of this poorer timber, or curtailing production. Production curtailments are certainly an option, especially if the cost of this poorer wood is high compared to the value that you can get out of it. Production curtailments also have a price tag attached to them because of higher fixed costs which increase the production costs of our lumber.

Even if we are able to work some of these presently UNMARKETABLE types into our timber supplies, I do not think that they will come close to satisfying the present timber supply shortfall.

One other possible alternative for increasing the coniferous timber supply, which I know some of the "forester types" listening would take me to task for not mentioning, is intensive forest management. However, our present Allowable Annual Cuts in the two Peace Region TSAs are already dependent on our successfully implementing a program of site rehabilitation which calls for the reforesting of 150,000 ha's of NSR and NC Brush land in the next twenty years. But present government funding levels will only allow us to do a fraction of this work. A major increase in funding is required just to maintain our present level of harvesting, let alone increase it.

The point I want to make in discussing all this is that there is now, and will continue to be in the future, a huge gap in the wood supply picture in the Peace. What is obviously bad news for the sawmilling industry, could be good news for the guy with some spruce or pine timber sitting on his land whether it be one foot or one hundred feet tall, or with some idle land that is not suitable for farming that could be brought into forest production.

To put it into perspective: In order to satisfy the entire 500,000 m^3/year softwood timber shortfall in the area, 160,000 to 250,000 hectares of Peace Region farmland would have to be growing coniferous timber on a sustained basis. This represents between one fifth and one quarter of the present privately owned land in the region. Whether it is practical or desirable for the farmers in the region to grow trees on a quarter of the land remains to be seen, but the market is out there.

Even if one or more of the present mills in the Peace goes out of business, bringing the local timber demand closer are to the supply, projections for the world demand for softwood forest products to continue to expand in the next few decades and as a result there should always be a ready market for private softwood timber.

TABLE I

MAJOR SAWMILL ANNUAL CAPACITY VS ALLOWABLE ANNUAL CUT

CUBIC METRES / YEAR

TSA	COMPANY	CAPACITY *	AAC	SHORTFALL
DAWSON CREEK	CANADIAN FOREST PROD.**	648,000	458,470	189,530
	CHETWYND FOREST IND.	625,000	430,950	194,050
SUB-TOTAL		1,273,000	889,420	383,580
FORT ST. JOHN	CANADIAN FOREST PROD.	625,000	305,830	319,170
	PEACE WOOD PROD.	600,000	458,840	141,160
SUB-TOTAL		1,225,000	764,670	460,330
TOTAL		2,498,000	1,654,090	843,910

* DOUBLE SHIFT, FIVE DAYS/WEEK
** INCLUDES TFL 48

844,000 M^3 SHORTFALL

TABLE II

VOLUMES FROM OTHER MOF PROGRAMS

CUBIC METRES/YEAR

TIMBER SUPPLY AREA	PROGRAM	A.A.C.
DAWSON CREEK (INCLUDING TFL 48)	SMALL BUSINESS	190,000
	WOODLOT LICENCES	15,000
	SUB-TOTAL	205,000
FORT ST. JOHN	SMALL BUSINESS	100,000
	WOODLOT LICENCES	15,000
	SUB-TOTAL	115,000
TOTAL PEACE	SMALL BUSINESS	290,000
	WOODLOT LICENCES	30,000
	SUB-TOTAL	320,000

MILL SHORTFALL - 844,000 M^3/YEAR

MOF PROGRAMS - 320,000 M^3/YEAR

SHORTFALL 524,000 M^3/YEAR

TABLE III

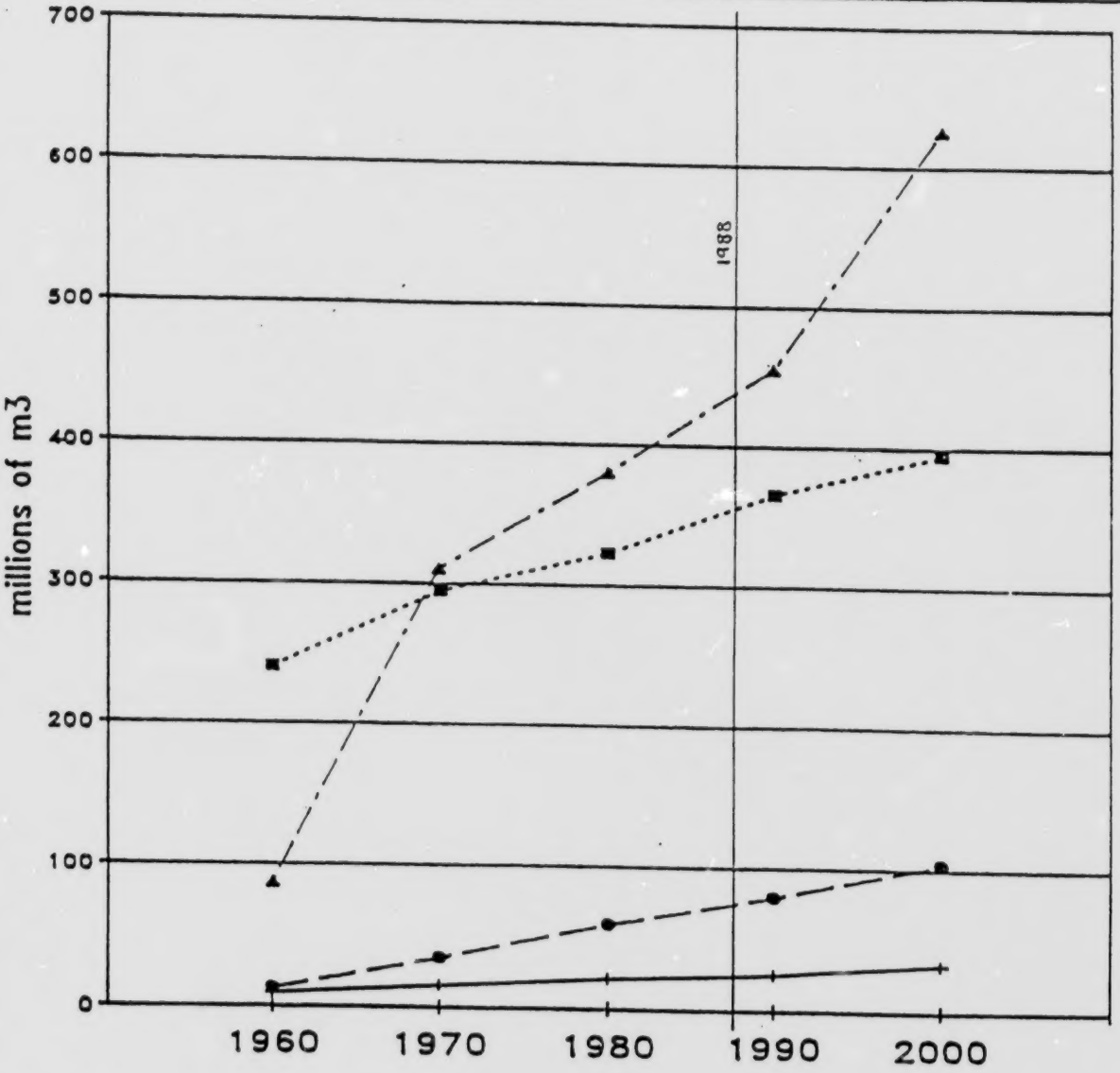
PROPOSED 5% REDUCTION OF AAC IN LONG TERM TENURES

CUBIC METRES / YEAR

LONG TERM TENURES PRESENT AAC	1,654,090
- 5% REDUCTION	82,700
AAC REMAINING	1,571,390
PRESENT MILLING CAPACITY	2,498,000
INDICATED SHORTFALL	926,610
MOF OTHER TENURES AND SALES	320,000
+ 5% REDUCTION TO LONG TERM TENURES	82,700
INCREASED AAC	402,700
INDICATED MILL SHORTFALL	926,610
INCREASED MOF PROGRAMS	402,700
SHORTFALL	523,910

SHORTFALL 524,000 M^3/YEAR

WORLD CONSUMPTION OF SOFTWOOD TO 2000



LEGEND

+ PLYWOOD

• PANEL PRODUCTS

■ LUMBER

▲ PULPS

TABLE IV

SOURCE : FAO

J.A. Collins, P.Ag and A.A. Hadland, P.Ag.
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FORESTRY OR AGRICULTURE: A CASE FOR DIVERSIFICATION

EXECUTIVE SUMMARY

Agriculture in the Peace River area is going though a significant adjustment, especially on those farms located on more marginal lands. Adjustments usually require a move away from grain products such as wheat, barley, and rapeseed to forage to be used for seed or livestock feed. This shift in cropping and enterprises is due to a number of factors, including weather induced poor yields during many of the preceding years, poor crop prices caused by surpluse wars and international trade subsidies, especially during the last three years, and a change of ownership and management orientation.

The future for grain and oilseeds is not entirely bright due to possible changes to the Western Grain Transportation Act, which, if implemented, will reduce transportation subsidies making low value products such as barley, oats, feed wheat and rye uneconomic. High value crops such as canola (rapeseed) and high quality wheat are more risky on marginal lands and can not usually be considered as practical.

The most viable option at present is the production of forage which can include grasses and legumes for seed or they can be utilized for livestock feed.

The model for forage production as a cash crop does show a modest return on investment which could probably be enhanced with the production of forage seed or utilization of the forage through livestock.

The forestry option should be considered carefully. Conversion of cleared agriculture land to forestry does not seem to be viable due to the long term carrying costs of the land and silviculture costs. However, if the land has a good stand of coniferous or aspen on a good growth site, there is an opportunity to consider leaving this in production on a sustained yield basis.

If this private land forestry base can be used to obtain additional land in forest production from the Crown on a long term lease basis, the economics look fair to good.

The option of forest products could be enhanced in the future with a overall wood fibre shortage globally, resulting in an increased demand for of pulp and paper, which would increse the use of Peace River Area aspen. The future looks bright for this natural resource and an investment today may, in fact, look very good in ten to twenty years.

The present return on aspen is so poor that there is in fact no return to the land or timber resource, but in the British Columbia Peace River area there seems to be sufficient interest in the wood that prices should improve in the future.

Other forestry products that should be examined closely are Christmas trees,

fence posts, pine shakes and firewood. The latter has some very good possibilities in the large urban centres but is probably limited in the more rural communities because of the ready access to a firewood supply as a weekend family activity.

The concept of a combined agriculture and forestry enterprise is one that many people could consider on what are considered marginal farm lands (C.L.I. 4 and 5). With the selection of appropriate crops (forages and trees), the viability may be as good as that expected from lands of higher capabilities, i.e., C.L.I. 2 and 3.

Arthur A. Hadland, P.Ag
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FORESTRY OR AGRICULTURE: A CASE FOR DIVERSIFICATION OF BRITISH COLUMBIA PEACE RIVER FARMS

OBJECTIVE

The objective of this study is to quantify the financial consequences of converting the use of private farmland from cash cropping into perennial hay or forest. This study is limited to the agricultural settlement area lying within the British Columbia Peace River area of those lands of C.L.I. class 4 and 5 comprising approximately 60,000 - 80,000 hectares.

REGIONAL PROFILE - AREA ECONOMICS

The Peace River Area is a 196 square km parcel of land which was defined by the Federal Government in 1907. Agricultural settlement was encouraged from the 1920's onward. An improved transportation system, complete with paved highways and the extension of the British Columbia Railway in the late 1950's, caused a shift from mixed agriculture to cash cropping cereals, oil seeds and forage seeds.

Today, there are approximately 400,000 hectares of cultivated farmland within the British Columbia Peace River area. An estimated 60% of this land is devoted to cash cropping with the remainder being used for livestock production and mixed farming.

The total land base is farmed by some 1,100 farmers. In 1981, the agricultural sector produced a gross income of $60,000,000 By 1986, it was estimated that this income had dropped to $40,000,000.

AGRICULTURAL TRENDS IN THE B.C. PEACE RIVER AREA

International events have been drastically changing the face of agriculture in the British Columbia Peace River area. The world economic recession and resultant deflation beginning in late 1981 eventually caused foreign land investors to withdraw from the Peace River farmland market. The subsequent shrink in farmland values placed highly leveraged land owners in a vulnerable position.

The steady decline in grain prices, beginning in 1981, illustrated by the following table for the period from April, 1985 to April, 1988, portrays a grim economic circumstance for the B.C. Peace River grain farmer. Attempts to boost average farm yields by individual farmers would slow the erosion of net farm income. We would suggest that it is difficult to sustain increasing yield averages under a continuous cropping program which requires increased levels of farm inputs.

TABLE I

AVERAGE GROSS INCOME PER CASH CROPPED HECTARE

	Average Yield Bushels Tonnes/Ha	Price Apr. 1985 $/Tonne	Gross Income $/Ha	Price Apr. 1986 $/Tonne	Gross Income $/Ha	Price Apr. 1988 $/Tonne	Projected Gross Inc $/Ha
Barley	2.000	$101.00	$202.00	$99.00	$198.00	$46.40	$93.00
Canola	0.785	335.00	263.00	297.00	233.00	266.00	208.00
Wheat #3RS	2.000	136.00	272.00	129.00	258.00	76.40	152.80

The economic squeeze for B.C. Peace River farmers was heightened in 1984 when the government subsidies on rail transportation was changed, providing a graduated formula under the Western Grain Transportation Act. This will see rail freight rates being increased to farmers to more economic levels by 1991. The Federal Government, through this Act, is committed to a base subsidy of $658 million per year but, by 1991/92, farmers shipping grain will be required to pay all additional costs above a ceiling of 31 million tonnes of exported grain.

It should also be recognized that the Federal Government has intervened with the Act, thereby keeping the freight rate at 1984/85 levels for the last three years. There is a reasonable possibility that this will not continue for 1988 which would lead to producer freight costs of $8.00 to $9.00/tonne compared to $5.60/tonne rate presently being paid.

By 1991, if the actual cost of freight increases, the additional cost will be passed on to producers. In addition, we must consider the implications of the U.S. Canada Free Trade Agreement and the G.A.T.T. negotiations which may deem our transportation subsidies to be an export subsidy.

TABLE II

TRANSPORT COST PER TONNE UNDER DIFFERING RATE SCHEDULES

YEAR	FREIGHT RATE/TONNE	
1980/81	$6.00	Actual price paid
1987/88	5.60	Actual price paid
1987/88	$8.00 - $9.00	Actual calculated producer share
1987/88	26.94	Actual freight cost to Vancouver
1987/88	56.71	Actual freight cost to Thunder Bay
1991/92	29.63	Actual cost to Vancouver

SOURCE: Western Grain Transportation Agency;1984

The previously mentioned factor may tend to preclude the export of coarse grains and other low value products. The economic options for Peace River grain farmers will be thus reduced.

The next objective is to place the current economic situation of the British Columbia Peace River grain farmer into perspective. An economic model for a 518 hectare farm which is being operated on a continuous cropping basis is presented, based on the following assumptions:-

(a) Unencumbered (debt free) private land
(b) 400 hectares cultivated,
    118 hectares poplar cover
(c) Land value $250/hectare cultivated
(d) Farm is minimum of 48 km from Dawson Creek or Fort St. John, B.C.
(e) Average crop yields:-

    Barley - 2.00 Tonne/Ha
    Oats - 2.00 Tonne/Ha
    Wheat - 2.00 Tonne/Ha
    Canola - 0.75 Tonne/Ha

    Source: Canadian Wheat Board Annual Report, 1980-81

(f) C.L.I. Agricultural Capability Class 4 to 5
(g) Continuous cropping cash crops
(h) The woodlands would not be managed
(i) Farm subsidies are not considered in this model

TABLE III

CONTINUOUSLY CASH CROPPING 400 HECTARES
1988 FARM INCOME PROJECTION,
EXCLUSIVE OF GOVERNMENT SUBSIDY PROGRAMS

OPERATING COSTS	WHEAT (#3RS) 133 ha	BARLEY (#1 FEED) 133 ha	CANOLA #1* 134 ha
Wild oat herbicide (land assumed to be wild oat free)	--	--	--
Broadleaf herbicide (includes spot treatment herbicides)	$ 4.00	$ 4.00	$ 1.00
Seed and treatment	7.00	5.00	4.00
Nitrogen (N @ $.23/lb)	6.90	6.90	13.80
Phosphorus (P @ $.25/lb)	4.50	4.50	4.50
Labour hired (3.8 h/Ha)	12.00	12.00	12.00
Fuel	10.00	10.00	10.00
Crop insurance	5.00	5.00	5.00
Machinery maintenance	9.00	9.00	9.00
Land taxes	1.00	1.00	1.00
SUBTOTAL	$59.40	$57.40	$61.30
Interest on operating capital at 11% for six months	3.21	3.16	3.37
TOTAL CASH COSTS	$62.61	$60.56	$64.67
Overhead at 5%	3.08	3.03	3.23
Machine depreciation @ 7% (investment at $125/acre)	8.75	8.75	8.75
Interest on machinery investment at 11%	13.75	13.75	13.75
Interest on equity land investment 9%	9.00	9.00	9.00
TOTAL COST PER HA	$97.19	$95.09	$99.40
Gross cost per crop	$32,364.27	$31,760.06	$33,100.20
GROSS FARM COST		$97,224.53	
Yield/hectare (tonnes)	2.08	2.04	0.78
Price/tonne	$75.00	$46.00	$266.00
Gross income/Ha	$64.48	$38.38	$84.70
Gross income per crop	$21,471.84	$12,818.92	$28,205.10
Farm Gross Income		$62,495.86	
Net income per Ha	<$32.71>	<$56.71>	<$14.71>
Gross Farm Net Income		<$34,728.67>	
Break even price/tonne is	$113.00	$115.00	$312.00

SOURCES: BCMAF, ALBERTA AGRICULTURE; LOCAL SUPPLY COMPANIES
*Canola should only be grown on a long term rotational basis due to weed, insect and disease control problems.

TABLE IV

CONTINUOUS HAY PRODUCTION
1988 FARM INCOME MODEL (400 Ha)

OPERATING COSTS	PER HECTARE
Seed cost $29.65/Ha over six years	$ 4.94
66.7 kgs or 16-20-0 @ $275/Tonne	18.34
Fertilizer application	4.94
Swathing and conditioning	22.24
Round baling	27.18
Hauling and stacking	9.88
Machine Maintenance (included in custom rates)	--
Building (hayshed maintenance)	--
Land taxes	2.47
Crop Insurance	not used
Labour (included in custom rates for each operation	--
SUBTOTAL	$92.99
Interest on operating capital at 11% for six months	5.11
TOTAL CASH COSTS	$98.10
Machinery depreciation at 7% (investment @ $133.55/Ha) - included in custom rates	--
Interest on machinery investment at 11% on $148.26/Ha - included in custom rates	--
Interest on hay storage - hay storage is generally not a consideration for round bales	--
Interest on land (equity) investment @9%	22.24
TOTAL COST PER HECTARE	$115.23
Gross Farm Cost	$46,091.00
Yield per hectare (tonnes)	3.2
Price per tonne (for good quality hay)	$40.00
Gross Income	$28.00/Ha
GROSS FARM INCOME	$51,200.00
NET INCOME PER HECTARE	$12.77
FARM NET INCOME	$5,109.00

Note that this net income of $5,109.00 is the return to the owner for management and profit, or a return of 11.0% on annual investment.

SOURCES: B.C.M.A.F. Consensus Study, 1978, and Custom Rates

Our objective with the model on the previous page was to determine whether or not there would be a return to management. The model indicates that these cash crop options have a negative return to management in 1988. A farmer using this model has the potential to lose $36,637.00 during 1988.

Price support programs such as the Special Grains Program, Western Grain Stabilization Act and the B.C. Feed Grain Subsidy Program are camouflaging the real net incomes that are shown in this model. It would not be prudent business management to project future cash flows using these intermediate support programs. If an individual feels that there will be continuation of one of these programs, he may insert it into his own budget.

Table I illustrates a downward trend in gross product prices. The negative net income in the preceding model indicates that it has become uneconomic to continuously cash crop. The economic realities dictate that an average farm investor will lose money on a cash cropping option. An intermediate term economic outlook suggests that there is to be little or no recovery of grain or oilseed prices to 1980-81 levels. A landowner must then ask himself what are his options.

We have considered the option of diversification into a perennial hay crop. This economic model will parallel the cash cropping model with the following assumptions:-

(a) Unencumbered (debt free) private land
(b) 400 hectares cultivated,
    118 hectares poplar cover
(c) Land value $250/hectare (cultivated)
(d) Farm is minimum of 48 km from Dawson Creek or
    Fort St. John, B.C.
(e) Average Crop Yield:

    Hay - 3.2 Tonnes/Ha

    Extracted from conversations with local hay
    producers and B.C.M.A.F. Personnel

(f) C.L.I. Agricultural Capability Class 4 to 5
(g) Six year rotation with oats as a cover crop for the
    underseeded forages. This land will be considered to be
    in continuous forage production.
(h) Livestock (red meat production to be considered as a
    value added product and not included in this model)
(i) The woodlands would not be managed
(j) Farm subsidies are not included in this model
(k) Harvest costs are based upon custom harvest rates

CONCLUSION

We have examined the economics of continuous cash cropping or perennial hay production. The hay production model showed some positive gains over grain cropping. Individual farm operators may be able to do better than these models due to specialized management practices. The risks associated with these farm models should not be underestimated because early fall frosts, droughts, fire, etc. can completely disrupt a potential gross income. A mixture of grain cropping and hay production would be of benefit as it would allow for a reduction of risk due to land rotation and crop diversity. Many producers with the ability to produce forages will not be content with the variability of forage prices and will eventually opt for a livestock operation. This, of course, requires further investment and would require further investigation which is beyond the scope of this report. The last agricultural suggestion that we will leave with you is to do nothing (play passive agriculture), with the land permanently seeded down and await a resurgence in agricultural prices and better cost margins. There may be other opportunities that a landowner can consider including small fruits (raspberries, strawberries, Saskatoons), green peas, forage seed and forestry.

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FORESTRY OR AGRICULTURE: A CASE FOR DIVERSIFICATION IN THE BRITISH COLUMBIA PEACE RIVER REGION

INTRODUCTION

The Future of Forestry and Agriculture

In Canada, the majority of forest land is held and managed by the Crown. Forests are viewed as a public resource. In spite of this, Canada is a leading world producer of forest products accounting for 22% of all forest products traded on world markets (CFA, 1987). But all is not well. There is concern for our ability to maintain or expand our forest products capacity due to a limited forest productivity (Bickerstaff, 1981). Some of our most productive forest land has grown back to weeds after harvesting.

In contrast, Sweden, one of our major competitors on world markets, has a large portion of forest land in private hands, and a large portion is held by small landowners. Sweden has about the same area of productive forest land as Alberta but supports an annual sustainable cut that is three times Alberta's cut (Summer, 1987).

In Canada we are logging what nature has provided and quite often we end up stealing our grandchildren's heritage by not sowing where we have reaped. On the other hand, the potential is there to increase the productivity of forest lands fourfold, if we will only do what is required (Patterson, 1977).

In the British Columbia Peace River area, there is a pending boom in the demand for timber. There is a limited supply of productive native forest. Budget limitations will likely prevent government from becoming involved in any large scale intensive management of forests, while new mills by Louisiana-Pacific and Fibreco and proposed new mills or additions by Fibreco, Louisiana-Pacific and Makin will increase the demand for timber. In the past few years, aspen bush has been changed from scrub to a marketable item due to changes in manufacturing technology and new mills.

TREES AS A CROP

Potential Products

Trees as a crop is a broad concept. The species of trees suitable to the Peace River area include white spruce (Picea glauca), black spruce (Picea mariana) lodgepole pine (Pinus contorta), balsam (Abies balsamea), Scots pine (Pinus sylvestris), tamarack (Larix laricina), aspen (Populus tremuloides), black poplar (Populus balsamifera), birch (Betula papyrifera) and hybrid poplars (Populus x).

Each species has a particular soil, aspect and condition which suits it best and each may be best suited to one or more products. A particular species or product may best complement a given situation.

Some of the potential market for forestry products and their relative values are listed in Table I.

TABLE I

SOME FOREST PRODUCTS AND VALUES

PRODUCT	PRICE/UNIT	PRICE/METER^3	$/HECTARE
LIVESTOCK FEED	$125.00/tonne	$19.00	
SHINGLES	30.00/square	21.00	
CHRISTMAS TREES	15.00/tree		$17000/YR
PINE FENCEPOSTS	0.40/post	49.00	
TAMARACK POSTS	1.25/post	152.00	
BIRCH FIREWOOD	140.00/cord	58.00	
DRY FIREWOOD	90.00/cord	37.00	
ASPEN LOGS		21.00	
SPRUCE/PINE LOGS		27.00	
BUILDING LOGS		28.00	
RAILS	2.50/rail	64.00	

(Alberta, E.N.R., 1982; Elmore, 1987; O'Brien, 1988; Maclean, 1988 and others)

Marketing Forest Products

Marketing a tree crop or forest product is different than selling grain to the Wheat Board or shipping a load of steers to the auction. For most forest products you must consider a market that is from six to fifty years in the future. A very careful market analysis and marketing plan as well as a fair share of good luck are a must.

Cash flow, return on investment and flexibility merit considerable attention on a crop where the return is so far in the future.

The major historical market, and the most probable future market for large volume tree crops will be large mills that specialize in efficient production and market their product worldwide. Market prices for the local species are shown in Table II.

TABLE II

MARKET PRICE FOR LOGS DELIVERED TO MILL *

SPECIES	HIGH	LOW	AVERAGE
ASPEN	$\$25/m^3$	$\$18/m^3$	$\$21/m^3$
SPRUCE/PINE	$\$30/m^3$	$\$25/m^3$	$\$27/m^3$

* PRICES SHOWN ARE CURRENT PRICES; LONG TERM PRICES ARE EXPECTED TO RISE DUE TO SHORT FALL IN TIMBER SUPPLY.

GROWING TREES ON THE FARM - THREE MODELS

The objective of this paper is to look at trees as an agricultural crop. Every agricultural enterprise is different and has its own peculiarities in regards to land, landowner objectives, cash flow requirements and debt load. In order to document some actual cases and costs, Dale McLean of Prince George in association with Interag of Fort St. John conducted a series of interviews with area people involved in forestry -agricultural endeavors. Their cost and productivity information has been used to generate the "ball-park" estimates used in the following models.

Using Idle Land

Most agricultural enterprises in the region have some area of poplar bush that is left idle or used as rough pasture. Some landowners will be fortunate enough to have aspen that is ready to harvest, which can be translated into cash. The question is how much? Table VI gives some average volume per hectare estimates. These are only estimates and it must be kept in mind that aspen stands are quite variable in terms of net yield.

If the farm aspen stand is 70 years old and merchantable, a volume of 230 m^3/Ha times a price of $\$21/m^3$ would yield a gross of $4830/ha. Net return after contract logging would be $1023.50/ha (before tax and overhead). Table III shows estimated present values of poplar bush at timber ages below harvest age.

Table III shows estimated present values of poplar bush at timber ages below harvest age. These numbers sugggest that there is some value in considering trees as a crop. Accordingly, three models have been developed. These are:

Model 1 Trees as a Crop
Model 2 Converting Cropland with FRDA
Model 3 Converting Cropland with FRDA and a Woodlot Licence

TABLE III

PRESENT VALUE OF POPLAR BUSH

The present value of poplar bush that is currently waste land or rough pasture is calculated based on the assumptions that:

- harvest at age 50 with a volume/hectare of 163 m^3/ha
- purchase price at mill is \$21/m^3
- logging cost delivered to mill is \$16.25/m^3
- overhead costs are \$0 as they are being paid anyway
- reforestation is by suckering, no cost
- interest rate is 9%

AGE OF ASPEN	VALUE/HA AT AGE 50	PRESENT VALUE
10	\$756.12	\$27.25
20	756.12	64.52
30	756.12	152.73
40	756.12	361.62
50	756.12	855.93

Average net return per hectare per year is \$17.12
Gross return per hectare per year is \$78.11

TABLE IV

LOGGING COST ESTIMATES

CONTRACTOR LOGGING		$/m^3
SUPERVISION OVERHEAD		1.09
FALL		1.50
SKID		3.50
LIMB/TOP/BUCK		1.38
ROADS/LANDINGS		0.99
LOAD		1.59
HAUL	50 KMS	6.54
TOTAL		$16.59

FARM LOGGED	$/m^3 NON-LABOR COST	
SUPERVISION/OVERHEAD	SELF	
FALL CHAINSAW	.25	
SKID FARM TRACTOR	5.04	*
LIMB/TOP/BUCK CHAINSAW	.52	
ROADS/LANDINGS (CONTRACT)	.99	
LABOR 0.5 MAN HOURS/m^3	SELF	
LOAD AND HAUL (CONTRACT)	8.13	
TOTAL	$14.93	
PLUS SELF AT $5.00/HR	17.40/m^3	

* SKID 100 TREES AT $2.00/$m^3$
AT COST OF $25/HR-10HRS.

OR

SUPERVISION/OVERHEAD	SELF	
FALL CHAINSAW	.25	
SKID HORSES	.32	*
LIMB/TOP/BUCK CHAINSAW	.53	
ROADS/LANDINGS (CONTRACT)	1.99	**
LABOR .81 MAN HOURS/m^3	SELF	
DECKING	1.57	
LOAD AND HAUL (CONTRACT)	8.13	
TOTAL	$12.79	
PLUS SELF AT $5.00/HR	16.86/m^3	

* SKID TO TREES AT $2.00/$m^3$
AT $10/DAY FOR TEAM
** DOUBLE COST DUE TO TWICE
AS MANY ROADS NEEDED

TABLE V

FOREST MANAGEMENT AND OVERHEAD COSTS

FOREST MANAGEMENT COSTS

	FARMLAND	BUSH
PLANTING	$125/ha	$425/ha
SITE PREPARATION	$125/ha	$450/ha
SEEDLING COST	$212/ha	$212/ha

OVERHEAD COSTS

TAXES	$1.25/ha
STUMPAGE	$2.12/meter^3
CONSULTING FORESTER	$0.53/meter^3
ACCOUNTING/LEGAL	$500/YEAR
RETURN ON ROUGH LAND	$125/ha VALUE AT 9%

TABLE VI

TIMBER CROP YIELDS

GOOD NATURAL STAND ON MEDIUM SITE

SPECIES	AGE yrs	VOLUME m^3/Ha	
ASPEN	30	99	1.
	50	163	
	70	230	
	90	297	
PINE	30	71	2.
	50	120	
	70	163	
	90	212	
SPRUCE	50	134	2.
	70	191	
	90	248	
	110	297	

MANAGED STANDS ON MEDIUM SITES

ASPEN	30	198	3.
	50	325	
PINE	30	141	
	50	240	
	70	325	
SPRUCE	50	269	
	70	382	
	90	495	

1. Based on Steneker estimates at age 70 and using straight line projection.
2. Based on empirical data at rotation age from McLean files and using straight line projection.
3. Based on above as modified by Patterson estimates of improved yield from natural stands.

Logging cost estimates used are presented in Table IV. These tables are a composite of case study interview costs and cost data on file. Forest management and overhead costs are as presented in Table V. These are a composite of file costs, assumptions and estimates from bid costing models.

MODEL 1. TREES AS A CROP

The value of trees as a crop is based on;

- growing pine to age 50 on farmland
- pine yield of 240m^3/ha
- land valued at $250/ha
- purchase price of logs at mill is $27/$m^3$
- logging costs delivered to is $16.59/$m^3$
- stand establishment is by planting

Initial Investment	
Land	$250/Ha
Seedlings	$212/Ha
Planting	$125/Ha
	$587/Ha
Harvesting Cost	$ 3982.25/Ha
Stumpage	NA
Consulting	127.50/Ha
Accounting/Legal (on 8 Ha/yr)	62.50/Ha
Accumulated taxes at $.50/yr	62.50/Ha
Total cost at harvest	$ 4793.74/Ha
Gross Return	$ 6545.00/Ha
Net Return before logging tax	$ 2310.25/Ha
B.C. Logging tax	$ 231.02/Ha
Net Return after logging tax	$ 2079.83/Ha
R.O.I.	2.6%

CASH FLOW CONSIDERATIONS - No money for 50 years

ANNUAL BUDGET BASED ON 8 HECTARES/YEAR

GROSS	$52360/YR
NET	$16634/YR

MODEL 2. TREES AS A CROP WITH FRDA

The value of trees as a crop is based on;

- growing pine to age 50 on farmland
- pine yield of 240m^3/Ha
- cultivated land valued at $250/Ha
- purchase price of logs at mill is $27/$m^3$
- logging costs delivered to is $16.59/$m^3$
- stand establishment is by planting 80% paid by FRDA
- planting done by owner

Initial Investment	
Land	$250/Ha
Seedlings & Planting	$ 67.50/Ha (Landowner share)
	$ 317.50/Ha
Harvesting Cost	$ 3982.25/Ha
Stumpage	NA
Consulting	127.50/Ha
Accounting/Legal	62.50/Ha
Accumulated taxes at $.50/yr	62.50/Ha
Total cost at harvest	$ 4234.75/Ha
Gross Return	$ 6545.00/Ha
Net Return before logging tax	$ 2310.25/Ha
B.C. Logging tax	$ 231.02/Ha
Net Return after logging tax	$ 2079.83/Ha
R.O.I.	3.8%

CASH FLOW CONSIDERATIONS - $125/Ha for planting done by owner
plant 148 Ha/Year; Year 1 & 2
$18500 gross return for planting

ANNUAL BUDGET BASED ON 8HA/YEAR HARVEST AFTER YEAR 50

GROSS	$52360/Year
NET	$16634/Year
YEAR ONE	$18500 PLANTING REVENUE
YEAR TWO	$18500 PLANTING REVENUE

Model 2 - Converting Cropland with FRDA Private Lands Program
Under the Canada - British Columbia Forest Resource Development Agreement, the Canadian Forestry Service offers a program to assist private land holders who wish to improve the forest potential of their property.

The landholder must contribute 20% of project costs and the maximum Federal contribution is $80,000. The land holder may undertake the work himself at a fair competitive rate.

MODEL 2. TREES AS A CROP WITH FRDA shows that the return on investment is improved to 3.8% because part of the capital used is provided by the program. In addition the landholder can get some cash income the next two years by doing his own planting. The cost of planting farm cropland is estimated at $212/ha for seedlings and $125/ha for planting. The cost to do 296 ha over two years is $337 x 296 = $99,900 of which the landowner must contribute $19,980. The land owner can earn $125 x 296 = $37,000 by doing the planting. This is projected to be done over two years to spread out the revenue and maximize return before the Agreement expires in 1990.

Model 3 - Converting Cropland with FRDA and a Woodlot Licence

Under the British Columbia Forests Act, a person can get a woodlot licence to grow and harvest timber. A woodlot licence area is usually selected and set up so that it has a balance of timber age classes including mature timber. A licencee can combine private land holdings into the woodlot management plan in order to increase the Annual Allowable Cut. There are currently 40 woodlot licences in the British Columbia Peace River area. By combining a 296 FRDA hectare plantation and 80 hectares of aspen bush that are privately held it would be reasonable to expect at least a doubling of approved cut to 800m^3 per year. This cut could be made on the woodlot licence area. This translates to an annual revenue of $27 x 800 = $21,600 that is realized now rather than in 50 years.

MODEL 3. TREES AS A CROP WITH FRDA AND A WOODLOT LICENCE shows a loss of $2.98. However the return on investment cost has been arbitrarily set at 4% which is a non-cash cost. The logging is done by the landholder and $3.37/m3 of the skidding is depreciation - a non-cash cost. Model 3 seems to be a reasonable situation to consider.

If every one in the Peace River area opted to used Model 3 as a recipe, it probably would not work for most of them. But it could work for some. There are other options to consider.

MODEL 3. TREES AS A CROP WITH FRDA AND WOODLOT LICENCE

The value of trees as a crop is based on;

- growing pine to age 50 on farmland
- pine yield of 240M^3/Ha
- cultivated land valued at $250/Ha
- purchase price of logs at mill is $27/$m^3$
- logging costs delivered to is $16.59/$m^3$
- stand establishment is by planting 80% paid by FRDA
- planting done by owner
- woodlot licence with normal AAC of 400 M^3/year
- woodlot licence AAC doubles to 800 M/year by including 2 sections of farmland

Initial Investment

Land	296 ha @ $250		
	80 ha @ $ 50	$84000	
Seedlings	296 ha @ $67.50	$19980	
Planting		FRDA	$103980 total

COST ITEM	COST/m^3	COST/YEAR
Logging	$17.40	$13900
Property Tax Farm	.81	648
Property Tax Woodlot	.25	200
Stumpage	2.12	1696
Consulting	.53	424
Accounting/Legal	.63	664
R.O.I. $103980 @ 4%	5.25	4200
Reforestation Cost	1.27	1016
Total	$28.26	$22748
REVENUE	$27/$m^3$	$21600/YR
LOSS	$1.26/$m^3$	$ 1148/YR

EXCEPT

1. Logging done by owner $3.37 if skidding cost is a non-cash cost
2. R.O.I. cost is a non-cash cost

CASH FLOW CONSIDERATIONS - $125/Ha for planting done by owner
plant 148 Ha/Year; Year 1 & 2
$18500 gross return for planting
$21600/year revenue from logs

YEAR 1 & 2 $18500 PLANTING REVENUE
$21600 LOGGING REVENUE
$40100 TOTAL REVENUE

YEAR 3 TO 50
$21600 LOGGING

OTHER OPTIONS - A STRATEGIC APPROACH

Growing trees as a crop may be an option on some lands for some agricultural enterprise. The preceding model showed a return and reasonable cash flow expectation given a very specific set of circumstances. Because trees are a long-term crop, a long range plan and strategy are essential.

Some reasonable option examples are:

1. A 1/4 section of poplar bush progressively logged for firewood. A flock of 60 ewes maintained for a cash lamb crop and to graze on the cut-over area while a Christmas tree plantation is established. Christmas tree plantation starts to yield a cash crop in year seven.

2. A young mixed wood stand is carefully logged for poplar firewood for own use to give growing space to spruce which will be maintained and logged at maturity to provide retirement funds to the land holder. Conventional farm crops provide a living on a year to year basis.

3. A mature stand of spruce is selectively logged and sawn by owner to provide a supplemental cash income to livestock or grain revenues in bad years. Sufficient standing timber is maintained to provide a continuous but limited supply.

4. Multi-row shelter belts of fast growing hybrid poplars and pine are planted to provide windbreaks for stock and to trap snow for moisture. The hybrid poplars will be logged and sold at age 25. The pines can be sold as transplants, Christmas trees, posts, pulpwood or sawlogs depending on markets and future cash requirements. The rows are replaced with new planting as they are logged.

The preceding option examples were not noted to provide multiple choice selection for a landholder. The examples are drawn from actual cases. The right choice for any given farm enterprise depends on the current situation in terms of profitability, soils, distance to market, debt load, equipment assets, and interests as well as planned future direction in terms of retirement plans and family land ownership.

Development of a sound strategy would involve:

- inventorying the existing farm enterprise elements that might bear on a tree crop
- defining the farm enterprise objectives
- developing a 25 year plan
- getting technical help
- getting started

A DIVERSIFICATION ACTION PLAN

A farm enterprise considering trees as a crop may find the following exercise enlightening and worthwhile.

1. Inventory the existing farm enterprise elements that might bear on a tree crop

- equipment that would have dual purpose use and its operating cost (tractors, trucks, sprayers)
- potential to provide low cost labor over a long term
- land currently in forest production
- state of timber on currently producing land (young old, volume per ha, health, species, potential products)
- debt load and capability of investing in a tree crop
- education and experience with trees
- current and projected profitability of land under existing production practices.

2. Define the farm enterprise objectives

- profitability
- lifestyle
- long term viable family land holding
- sound environment

3. Develop a long term plan that will

- project production and cash flow for a minimum of 25 years
- use reasonable cost and market projections
- include a fairly in-depth market assessment
- maintain a reasonable level of flexibility

4. Get help

- take advantage of any reasonable financial assistance programs
- take advantage of available forestry extension services
- read everything available about your planned species and products
- hire professional help in line with the amount of investment you are contemplating

5. Get started

- a tree crop is a long term venture, there is no urgency to plant now; on the other hand if your plan is to go ahead with a tree crop, a year lost before planting is a year lost before harvest at the other end.

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ECONOMIC RETURNS TO PRIVATE WOODLOTS UTILIZING ASPEN FOR SALE IN PULPING

INTRODUCTION

The first question which is raised when a private landowner is approached to see if an interest can be aroused in perpetuating land use for forestry management is, "Will I make any money?" This short economic investigation is presented to form the bottom line to this question. Basically, this "lowest return" scenario is represented by the fact that the commodity for sale is the waste wood (aspen pulp) or the cheapest product of the unit. Not considered is the more valued end product of dimensional lumber, posts and rails, Christmas trees, panel board or firewood, and intangibles including soil and water retention and enhancement (conservation), wildlife preserves, and reduction of cereal crop subsidies including crop insurance and transportation assistance. With these various attributes placed into perspective, a net return per hectare equally two to three times the "bottom-line" figure for pulping wood is not out of line.

THE RESOURCE

Statistics Canada in the 1981 Census indicated that there was 284,000 hectares of private wood on 7,100 farms in Saskatchewan (40 ha/farm average). At present, sales of farm woodlot products is approximately one million dollars per year. Saskatchewan has the fourth largest amount of private forested land of any province but now ranks ninth in sales. The potential is well over $17 million per year.

Trembling aspen (white poplar) is the dominant species in 85 percent of these private land units. Our analysis will therefore target the average woodlot unit of 40 hectares with an average stand yielding 112 m^3/ha. (Sask. c-10 Inventory Zone containing an average of six classes). Considering the 40 year rotation age for aspen, the sustained yield and thus the annual allowable cut would equal approximately 112/40 = 3 m^3/yr./ha.

BUDGET PRODUCTION COMPARISONS

Cereal vs. Aspen per Hectare Basis:

Returns	Barley	Aspen
Expected yield/ha	106.2 bushels/ha	3.0m^3/ha
Expected price/unit	$1.00/bushel	$28.00/$m^3$ (WH Co.)
Gross return/ha	$106.20	$84.00/ha

Cost of Production per Hectare:

A. Barley	
Seed (seed, treatment, cleaning)	11.12
Fertilizer	
-N	4.20
-P	10.37
Chemicals	
-grassy weed	12.35
-broad leaf	2.96
-insects	-
Fuel and Lubrication	12.35
Repairs	16.80
Crop Insurance	7.66
Other Costs @ 5%	3.95
Land Tax	4.94
Machine and Building Insurance	4.94
Building Repair	2.47
Total Cash Cost for Barley	$94.11/ha

Net for Barley to cover deprec. and management = $12.10/ha

B. Sustained Yield Harvesting - Aspen	
Size of Woodlot = 40 hectares	
Average Volume/hectare	112 cubic metres
Total volume of woodlot	4,480 cubic metres
Rotation age	40 years
Annual Harvest	112 cubic metres

To take advantage of economies of scale, it is recommended that once every five years, 560 cubic metres be harvested and sold. Aspen will regenerate at very little cost and, therefore, no costs are attributed to regeneration.

Harvesting Costs

1. Cutting, forwarding, loading--assumption made that farm has required equipment (tractor, chainsaw):
   - estimate on a daily (8-hr.) harvest of 50 cubic metres

   Equipment

a.chainsaw	- used 25% of the time - estimate cost at $2.00 per hour	- Total Daily Cost	$4.00
b.Tractor	- Used 40% of the time - cost $24.32/hour (Sask. Ag.)	- Total Daily Cost	$77.82
	Total Daily Equipment Costs		$81.82
	Cost per cubic metre		$1.64

2. Loading wood on truck - assumption again made that farmer has required equipment (front end loader on tractor)
   - one 4-ton converted grain truck will haul 11 cubic metres

   Equipment

   Farm Tractor with front end loader
   - cost $24.32 per hour
   - will require 45 minutes to load 11 cubic metres

- Total cost for loading one truck $18.24
- Total load on truck = 11 cubic metres
Cost of Loading per cubic metre $1.65

3. Hauling wood to mill - assumption made that farmer has a truck suitable for hauling wood.
   - average load on 4-ton grain truck = 11 cubic metres
   - trucking will require 1.5 hours for round trip of 100 kms
   - cost/hour 4-ton grain truck (Sask. Ag.) $75.00
   - total costs per haul $112.50
   - total volume hauled = 11 cubic metres
   Costs for Hauling per Cubic Metre = $10.23

4. Miscellaneous Costs per 560 m^3
   - modification of haul truck (stakes) $200.00
   - modification of tractor (protection) $500.00
   Total Miscellaneous Costs $700.00
   Miscellaneous Costs per m^3 = $1.25

TOTAL COSTS FOR PROJECT PER m^3

1.	Cutting, forwarding, bucking	$ 1.64
2.	Loading	1.65
3.	Hauling	10.23
4.	Miscellaneous	1.25
5.	Land tax	2.00
	Total Costs	$16.77

Total cost of Harvesting 3.0 m^3 = 3.0 x 16.77
= $50.31/ha

Net for Aspen to cover Depreciation & Management = 84.00 - 50.31
= $34.00/ha.

In summary, the net value of aspen in comparison to barley in this analysis is $ 34.00/Ha for aspen compared to $ 12.10/Ha for barley. The argument might be made that the price quoted for barley of $ 1.00/bushel is too low, but this is the price being paid at the time of the analysis. Also, the same could be said for the price of aspen, which might rise. However, the main value of the analysis is showing how the comparison may be made and thus the reviewer may insert prices and costs as appropriate and judge for himself the relative merits of the different crops.

OTHER CEREAL CROP HIDDEN EXPENSES

When marginal land is cropped, costs are incurred under several existing federal government programs. For example, such costs include an estimated $2.50 per hectare for Western Grain Stabilization premiums, $7.40 per hectare for Crop Insurance premiums and $12.50 - $25.00 per ha under the programs such as the Special Canadian Grains Program (SCGP). These types of program costs could be saved when the marginal land is kept in forest cover.

Another factor which is not considered in the analysis is that the land is

usually not continually cropped. Therefore, with a one in three year summerfallow rotation, barley calculated annual yields should be reduced by one-third.

All of the above factors would accentuate why farmers are feeling the crunch with production in the traditional cereal crops and why government intervention is requested at this time of low prices.

SUMMARY AND CONCLUSIONS

The preceding analysis was performed with the objective of determining the financial and economic feasibility of wood fibre becoming the new farm commodity for forestry fringe residents. In reality, we should not insinuate that it is a new field, as most of these residents have been engaged in the forest industry since homestead days in some form, whether it is off-season work in the bush, driving logging trucks, road building or simply obtaining firewood. The main difference is now that aspen (the weed tree) is now in commercial demand.

The Federal Government, and in particular the Canadian Forestry Service in Agriculture Canada, has the role in this opportunity identification and in effective and efficient utilization of the total resource. As well, exports for the U.S.A. and Pacific Rim market would be enhanced. Eventually, the opportunity would develop alone pending demands from industry expansion. However, it is logical to systemize the processes to derive economics both for the producer and industry. Improper delivery to mills at the wrong time and inappropriate wood condition would be but a headache for both parties. As well, poor harvesting methods and poor forest management would impose landscape and resource degradation.

The time for a private woodlot strategy is now.

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DIVERSIFICATION OF AGRICULTURE IN SASKATCHEWAN
Some Selected Examples

Farming in Western Canada is changing. No longer can we depend solely on cereal farming. Diversification is essential. The present economic situation has made this necessary.

Diversification ideas are coming from all areas. The ideas which will succeed are those that are compatible and even beneficial to additional agricultural operations. These include honey, game farming, fish farming and forestry as well as many others.

This quest and need for diversification has led to the removal of the "Agriculture blinders" that have been imposed on us by tradition. It is important that these blinders be removed. It will turn farmers into land managers and entrepreneurs, talents and traits that will be necessary for survival.

These innovative farmers who are removing their blinders are showing forestry people an excellent example. Forestry people have their own set of blinders. We have not traditionally looked at private land as a source of wood products. I believe this has been a mistake.

Forests on private land are a crop. Forest crops can be quite beneficial to both cereal crops and livestock if it is integrated into the farm operation. The future-thinking farmer or rancher will at least look at the potential and may well get involved in forest cropping.

Forestry is not for all farmers. It will be important to carefully look at your situation and the markets and returns before getting involved.

Markets for forest products is the most important factor in deciding whether to get involved. It appears that there is a demand for most forest products including aspen or balsam poplar in the Peace River Area. In addition to industrial markets, special market opportunities also exist which may include Christmas trees and fuelwood to name a couple of those.

B.C. has long been a leader in forestry in Canada. A lot of the expertise gained in the provincial forest can be used on private lands. There appears to be a good market for forest products. Services are available to interested people. It's a diversification opportunity that should not be overlooked.

In closing I'd like to present a few examples from Saskatchewan. One farm sold saw timber for $37.50 a thousand on the stump. He put no labour into the operation and re-couped $9,000 cash. These trees were cut off land not suitable for agriculture. It was a selective harvest removing only a portion

of the trees. He should be able to repeat this operation once every 10 to 15 years.

Another farmer was offered $2 a cord stumpage for poplar to be used for pulp. He looked around and found a market opportunity for poplar building logs. His stumpage was $60 a cord. Again it was a selective harvest.

Use of fuel wood for heating can easily replace a $1,000 worth of an oil or gas bill on a yearly basis.

Christmas trees have been traditionally imported into Saskatchewan. A group of farmers are now growing these products. It's a $2 million a year business in Saskatchewan.

And one final example on lack of awareness of the value of the resource. Recently a charter of land sold for $20,000. There was $32,000 worth of timber on the stump.

In summary, take a good hard look at forestry. It's an opportunity that is available and should not be overlooked.

Peter DeMarsh
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THE DEVELOPMENT OF WOODLOT OWNER ORGANIZATIONS IN NEW BRUNSWICK: LESSONS FOR SUCCESSFUL SMALL-SCALE FORESTRY

The purpose of this presentation is to provide a brief description of the formation of woodlot owner organizations in New Brunswick, and to make a few brief comparisons with developments in Quebec and Nova Scotia. An attempt will be made to identify the most important conditions for successful small-scale forestry from a New Brunswick perspective, and to present some of the lessons which emerge from the New Brunswick experience as woodlot owners there have worked hard to put those conditions in place.

Background Circumstances in New Brunswick

Thirty-five thousand woodlot owning families with an average holding of 50ha each, as a group own one-third of the New Brunswick forest. Woodlots date back to the period of original European settlement in the early 1800's. Many are still attached to family farms and have made an important contribution to farm income for several generations.

Today, New Brunswick woodlots annually produce about 1,250,000 cords of pulpwood, sawlogs and fuelwood which will be worth close to $100 million in 1988. Six companies which own ten pulp and paper mills dominate the forest industry in New Brunswick. They obtain about 25% of their raw material requirements from woodlot owners.

In the 1960's woodlot owners began to form organizations to improve their marketing situations. The problem they faced was caused by:

The monopoly buying power of the companies meant low prices and constant uncertainty of delivery. The normal rules of supply and demand don't work in a situation with one large buyer and a large number of small sellers.

This situation of weakness was made even worse due to the fact that the companies were given free access to wood from Crown Lands, which make up one half of the New Brunswick forest. This made it easy to keep woodlot owners in a very unfavorable marketing position.

Development of the Organization

In order to strengthen their marketing position, owners established seven regional marketing organizations for dealings with industry, and a provincial Federation to represent all owners on matters of government policy. Two types of legislation were obtained to encourage productive negotiations with industry:

A framework was established which requires industry to negotiate once a year with the seven regional groups for wood prices, volumes, and delivery

schedules for all woodlot owner pulpwood and sawlogs. This framework sets down a schedule of dates during which regular negotiations must take place. If no agreement is reached, a settlement is imposed by binding arbitration.

What really makes the system work is the requirement that settlements must be reached before companies are granted their annual Crown Land permits. This provision was based on our success in getting across the idea that it is not right for government to compete with private citizens trying to sell a product.

As a result of the past 15 years' efforts to put this system in place and to make it work, all woodlot pulpwood is sold on contract, prices have risen substantially, and deliveries are much more stable than in the past. The system is still in the development stage and a constant effort is required of the organizations to ensure that it works as intended, but in general, it is functioning fairly well.

In Quebec, 120,000 owners with 10 percent of the forest land base and providing 25 percent of the province's wood supply (by virtue of location) established a similar framework of organizations and legislation. Because they began 10 years earlier than their counterparts in New Brunswick and with the added lobbying clout of a strong farm organization which is largely lacking in New Brunswick, prices in Quebec are at present about 15% higher than in New Brunswick. Their efforts, in fact, were an important inspiration for developments in New Brunswick.

Nova Scotia has the same number of woodlot owners as New Brunswick and a higher proportion of the forest in woodlots (50 percent). The lack of success there in establishing effective marketing legislation and a unified organization accounts for prices 15 percent lower than in New Brunswick.

Administration of the private woodlot section of New Brunswick's Federal-Provincial Forest Resource Development Agreement was undertaken by the organizations as a second area of activity, as the marketing system began to fall into place. Last year, expenditures for thinning and planting on woodlots amounted to $2.25 million with about 1,000 owners taking part in the program. Efforts have now begun to negotiate improvements in the next five-year agreement which should begin in 1989. A larger budget and broader range of activities are being considered. Ideally, an entirely separate agreement for woodlots will be put in place so as to remove confusion about the differences in administration costs on private as compared with Crown land, and to reflect the fact that woodlot owner objectives are broader than increased softwood production and include other interests such as hardwood and wildlife management.

Market development is a new area of activity that New Brunswick organizations have just entered. Most existing markets are for softwood species and the 2 pulpmills and 4 waferboard mill markets which use poplar are able to buy only about one-third of our available supply. One partnership has already been established by woodlot owner organizations with industry to reopen and modernize a waferboard mill and a number of new projects are being actively pursued, including a wood energy plant to produce electricity from wood chips as well as a number of new methods of processing poplar into chemicals, moulded products, or pulp. The number of such new processes which has emerged

in the last 6 months is astounding, and is the basis for considerable optimism that the problem of poplar markets may soon be a thing of the past.

The basic goal of all of these efforts has been to make it possible for woodlot owners to sell all of the products we can grow at fair prices, prices which allow owners to cover all silviculture costs without government subsidies with enough left over to provide a reasonable return on investment. Until that point is reached, a fair share of government dollars devoted to forest management programs is considered a necessary part of financing woodlot management.

Our current strategy of involvement in ownership of industry is intended to help speed up the process of establishing fair prices. Even where industry produces wood from land it owns directly, it considers wood a cost, not a source of profit. It looks for its profit when it sells its finished product such as waferboard or newsprint. Woodlot owners try to make a profit from selling wood which is our end product. In New Brunswick, we believe that to really benefit from growing trees, we must share in the profit from producing the newsprint and the waferboard by owning a share in newly developing industries.

Main Conditions for Successful Small-Scale Forestry in New Brunswick.

Having looked at where the woodlot owner organizations in New Brunswick have come from, and what we are aiming for, an attempt can be made to summarize the conditions needed for achieving successful small-scale forestry.

Dollars are the key. There is an occasional bureaucrat in New Brunswick who likes to promote the notion that woodlot owners can be persuaded to do intensive forest management because it's a nice idea, it will feel good, or because we have a duty to society to grow more trees to do our part in the struggle against the wood shortage. According to this thinking, the financial rules we follow as woodlot owners are somehow different from those followed by the rest of the country where people are not expected to invest without the expectation of a reasonable rate of return. In fact, I'm always surprised by the tremendous willingness of many New Brunswick woodlot owners to do the best possible job they can do, looking after their land even though the expectation of a reasonable return is absent.

However, there is only so much effort possible without dollars, and ultimately, those dollars will have to come from the market. To work toward obtaining those dollars requires a fair and effective marketing system. In New Brunswick, that means several things: i) woodlot owners are the people who must decide what kind of system they want. It should not be imposed on them by government. ii) woodlot owners must have a united voice, an organization that represents all of them. iii) The organization must be independent if it is to do a good job representing its members. It must represent its members and only its members. It would be easy to become an arm of government or industry which wants our wood as cheaply as possible. They are not in the charity business, and neither should we be, which is why we need to make sure our organization protects its independence. iv) Another essential is solid government support in the form of adequate legislation which sets down a timetable for annual negotiations and arbitration, and which makes sure that Crown wood doesn't compete with our wood on the market. v) Where markets

don't exist, our organizations must help to create them. As mentioned earlier, we plan to invest in new industries.

In Quebec, owners have done a better job at this than we have. They have 15 groups with a Federation, but even with more groups, they have better coordination amongst the groups during their annual negotiations with a stronger role played by their provincial Federation, and they are doing a better job of sticking together.

In Nova Scotia, the main woodlot owner organizations are small forest management co-ops with 100-200 members each. The coops look after silviculture and harvesting for their members. They provide a useful service, but are not a substitute for a good marketing organization.

This is our new big challenge and even greater responsibility. To ensure success, we

(a) must ensure that investments are sound, and constantly monitor and evaluate our position, and

(b) make sure that we don't lose touch with our roots, that we don't start acting like just another company so that the members lose confidence in our ability or desire to represent their concerns.

The second condition is an effective government assistance program for forest management until markets generate enough dollars so we can look after our silviculture costs ourselves. The government can also do more to support forest management on woodlots through changes in the income tax system, something which will be considered by Ottawa later this year.

Thank you and let me just say again how pleased I am to have this opportunity to visit the Peace River country of British Columbia and meet some of you.

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A GLOBAL VIEW OF SOFTWOOD TIMBER RESOURCES

INTRODUCTION

The objective of this paper is to provide a brief synopsis of world softwood timber supplies til the year 2000. This is obviously of great importance to Canada, and B.C. in particular, because this country represents one of the biggest exporters of forest products in the world. So, by examining the prospects for incremental production of softwood species from regions competing with Canada we can get a better idea of what market will be available for Canadian forest product exports in the next decade or so.

This type of discussion has been sparked in recent years by the confusion and even alarm caused by buoyant timber supply projections from competitors like the US South, New Zealand and Chile. At the same time, there are many in the forest sector who are legitimately concerned about the structure of the B.C. forest products industry and the impending doom of the so called falldown effect. I propose to show that existing timber supply projections are too optimistic and that as a result British Columbia will not find its markets, for either lumber or fibre products, swamped by competing plantations or by intensively managed natural forests in other countries. In fact, the only prudent course is to regard the B.C. forest resource as a major natural asset which will increase in value. It should therefore be managed more intensively and with a confident eye to the future. The flow of products from private woodlots can contribute to this future particularly when one considers the supply constraints in this country as well.

I have limited the country analyses to those with which B.C. competes now or is likely to do so in the next 20 years. The softwood forests of the northern hemisphere require the most attention because they currently represent our greatest competition. However, the afforestation activity in developing countries is examined as a potential threat which is less well understood. Special emphasis is directed to plantation forests and the product mix which is likely to flow from them. Fuelwood is not examined.

I will start with a broad overview of Canada and B.C. in a global context. This will be followed by discussion of the individual countries starting with the major competing areas in the U.S., Europe, Russia and Japan in that order. Followed by New Zealand, Australia and the developing countries in the southern hemisphere. For each country I'll start by showing the projections made by the Food and Agriculture Organization (FAO) and then the reasons why I feel these projections are overly optimistic. After looking at all these numbers, I'll conclude with what I think it all means to the B.C. forest industry in general and to private woodlot owners in particular.

BRITISH COLUMBIA'S FORESTS IN A GLOBAL CONTEXT

Around 13% of the world's supply of industrial softwood is now harvested in Canada. British Columbia contributes over half of this Canadian total, or about 7% of world softwood growing stock. Moreover, the B.C. timber contains a relatively high proportion of sawlogs and the fibre quality makes it very attractive for pulp and paper. With respect to individual products, B.C. exports more softwood lumber and more bleached kraft pulp than any other country.

A policy target of approximately 200 million m^3 for the year 2000 was suggested in a 1979 report of the Canadian Council for Resource and Environment Ministers. This level is now considered excessive according to more realistic consideration of forest renewal activity, protection performance, utilization standards, and continuing allocation of forest land to wilderness and other single purpose use. The past and projected industrial timber supply for all of Canada as perceived by the FAO is given in Table I. A supply of 166 million m^3 is predicted for the year 2000. In fact, the combined Canadian annual allowable cut of softwood currently totals 166 million m^3. Both figures will be difficult to sustain due to serious over-commitments now recognized in every region. I believe it is not too late to forestall a reduction in total harvest through intensive management, but the volume of sawlogs will certainly decline in the next decade by perhaps 10%.

UNITED STATES

The United States is our largest customer for softwood products. It is also our major competitor in offshore export markets, a fact which is generally overlooked. The U.S. now produces about 26% of the world's industrial softwood. Table II shows the projected increases from the 1982 US Forest Service timber supply analysis, and Table III, from the FAO timber trends study. Both are now believed to be overly optimistic. The factors pointing to lower availability targets are as follows:

* Shrinkage of the forest land base
* Management of non-industrial private lands
* Growth and yield projections
* Age class distribution
* Inventory volume trends
* Product suitability of plantation timber

The most notable over estimates among these projections is for the South. It indicates an increment for the period 1976 - 2010 of 73.3 million m^3, which is just slightly under the current production of B.C. This won't happen. In fact, it is beginning to look as if this region is approaching a plateau. There are indications that the reservoir of sawlogs in the old "natural pine"

category has been drawn down steadily since the early 1950's. Moreover, the loblolly pine plantations are designed primarily for fibre products because this species does not make the premium grade lumber required to compete in dimension markets. Furthermore, there is a consensus that further erosion of the forest land base in the South is expected as non-industrial private owners choose not to regenerate after harvesting.

As in the South, the Pacific Coast states will experience a reduction in sawlog availability which has been predicted for the last 15-20 years. It now appears that this projected decline has already set in, and that it may be more serious than originally predicted. The reduction will be worsened to the extent that additional large areas are set aside for spotted owl and other non-timber use. The U.S. Forest Service has projected an area loss of 11% by 2010.

The projected 1976 to 2010 increases in Rocky Mountain and Northern States (54% and 78% respectively) are likewise regarded as optimistic due to substantial wilderness allocations, high costs of access and logging and recent major losses to the mountain pine beetle in the Rocky Mountains, and to hardwood encroachment after harvesting and the spruce budworm in the Northern States.

On balance, it is evident that the projected 1976 - 2010 increment of 97.7 million m^3 should not be anticipated. In fact, it is even doubtful that the earlier and lower trend projection of the FAO is likely to be achieved. Furthermore, it appears as if the US is in the same situation with respect to sawlog supplies as in Canada. Both countries are facing substantial reductions in volume of prime, old growth sawtimber. The outlook for fibre logs is relatively more buoyant.

NORTHERN AND WESTERN EUROPE

Europe has about 180 million ha of forest land, which is only 40% of that in Canada, while producing annually about 215 million m^3, or three times that of B.C. The Nordic group alone has one fifth the forest area of B.C. but harvests 20% more. The explanation for this discrepancy is the lengthy tradition of intensive forest management, especially in the Nordic countries and the EEC. The western European market used to rank second in importance to B.C. producers, but has now dropped to third place behind Japan.

The FAO projections for softwood roundwood supply for northern and western Europe are given in Table IV. There is a projected increase of 50 million m3 of coniferous roundwood harvest over the next 20 years. However, the majority of the forested area in these regions are in small private forests whose owners have much the same attitudes as their counterparts in North America. Many of the owners are not inclined to manage up to national policy target levels, nor to sell woodlot timber automatically when it is mature. In the western countries only one tenth of the non-industrial private lands are managed under formal plans. Therefore, despite the long history of well managed forests, the FAO projection of a 40% increment from 1980 to 2000 is unlikely to hold up. The acid rain question in another reason to exercise caution.

British Columbia would also like to know whether the sawlog supply in Europe can be increased. The FAO Working Party concluded that the sawlog share of the harvest would fall from 51.4% to 45.5% in the years 1980 - 2000.

On balance, there is evidence that Europe is moving to increase its softwood supply, but in a modest way which will hardly increase its self-sufficiency. An increase in natural losses due to acid rain or other reasons could only lessen the softwood supply in the year 2000.

THE USSR

Around 26% of global softwood supply is produced in Russia. However, growing conditions are far from ideal, distances are vast and the Russian forests west of the Urals are badly depleted. Much of the unoccupied forest is north of 60 degrees and the occupied forests have been mined. The obvious conclusion is that Russia must open up its presently inaccessible north and east if it expects to maintain existing production levels, let alone expand them. The success of such a geographic shift is dependent on new rail facilities, a more generous allocation of scarce capital, an improved availability of workers in an inhospitable climate, and improved marketing in order to sell the overmature timber and especially the greater volumes of larch.

The 1982 FAO report (Table V) predicted an increase in volume for the period 1980-2000 of 114 million m^3, compared to an increase in the US and Canada combined of 86.5 million m^3. The policy target for the year 2000 was 398 million m^3, which would have permitted Russia to maintain its global share. It is hardly likely that Russia can achieve such volume gains in 20 years given the types of constraints which prevail. In fact, an increase of 40-50 million m^3 would be generous, unless they make unusual advances in utilization of existing stands.

The Russian policy target also indicated that the majority of the incremental supply between 1980 and 2000 would be in sawlogs or in exports. Again, this is highly unlikely given the fact that logging is being driven further up North and into larch timber types which are less competitive in terms of lumber grades used for construction purposes. On balance, Russia will achieve higher levels of softwood production only with much greater commitments to the sector than are presently visible.

JAPAN

Japan ranks as the world's second largest importer of forest products. They actually exceeded the US in 1973 and again in 1979 and 1980 in dollar values of imports. Japan is also heavily forested with two thirds of their land so classified. It follows that Japan's future role in forest products trade and its performance in forest land management are of major importance to B.C.

Since 1950 Japan has planted nearly as much area as the U.S. South. In spite of a long tradition of forestry, they now produce only 2.5% of world softwoods. Moreover, their plantations are not being spaced and thinned on schedule. The reasons are that private ownership predominates (nearly 60% is private with an average parcel size of only 2.6 ha), and no market for costly thinnings has

developed in Japan. Meanwhile roundwood imports are more cheaply obtained from Southeast Asia and the U.S.

Timber supply prospects are provided in some detail by the Japanese. Their official data are shown in Table VI for softwood supply, together with the FAO's projections. The Japanese policy target is that domestic supply will more than double between 1976 and 1996, while the FAO projects a doubling in the period 1980 to 2000. These targets are set unrealistically high to ensure that increased self-sufficiency can be realized. Realistically, the North American as well as the New Zealand and Russian forest sectors are much more competitive than Japan thereby adding to the pressure on Japan to maintain a high ratio of imports. A more likely figure for the year 2000 would be 35 million m^3.

OCEANIA

The countries in this group are Australia, New Zealand, the Solomons and Fiji. Together they account for just over 1% of world supply. Total roundwood production in 1980-82 averaged 35 million m^3, of which 15 million m^3 were softwoods. New Zealand accounts for two thirds of the softwood while Australia has the greater share of hardwoods. The plantation forests of New Zealand are of special significance to B.C. because of their export potential around the Pacific Rim. Australia is striving for self-sufficiency by 2000.

Almost the entire forest industry in New Zealand is based on radiata pine. The total plantations now occupy one million ha and 40,000 ha are added each year. The new crop is being tended more intensively with widespread thinning and some pruning. They are driving for high quality sawlogs. With only limited consumption increases possible in the domestic market, the challenge is to expand export sales. Of the current harvest of 10 million m^3, 4 million m^3 in equivalent roundwood are being exported, but only one tenth is being exported as logs, the rest as lumber, pulp and paper. Even if buoyant markets were available for lumber, pulp and paper, the New Zealand forest industry would face problems in attracting investment capital and developing the necessary infrastructure.

The 20 year forecast of the FAO for Oceania indicates an increase from 14 to 38 million m^3 by 2000 (Table VII). This projection has been scaled down by the New Zealand Forest Service to reflect market constraints. None the less, the implications for B.C. are reasonably clear. We will have more competition in Pacific Rim markets, but spread over logs, lumber and fibre products. New Zealand is unlikely to produce more than 1.5 million m^3 of clear sawn timber and veneer by the year 2000.

LATIN AMERICA

The natural forests of Latin America are of relatively minor concern to B.C. Most of these forests are hardwood species which do not compete directly with our softwoods. But there are substantial man-made forests in Brazil and Chile, mainly in radiata pine and eucalyptus, which compete directly with North American production in wood and wood fibre markets.

Latin American countries are not big exporters of forest products. They account for only 3% of world exports and the majority of this is traded within the region. They import substantially more than they export. In spite of this, the export capabilities of Chile and Brazil are increasing to the point where Brazil is now a force to be reckoned with in European markets for bleached Kraft pulp and Chile is moving up strongly in logs and lumber. Only Brazil and Chile are considered as strong international competitors in softwoods.

The 1982 FAO report projections predicted that Latin America's industrial softwood production would increase from around 23 million m^3 in 1980 to 62.5 million m^3 in 2000 (Table VIII). The strategy in Brazil has been to emphasize pulpwood fibre rotations, which is in sharp contrast to Chile. Chile is the one to watch when it comes to log and lumber products in Pacific Rim markets. Given the institutional problems in Latin America, however, and especially the difficulty of raising investment capital in Chile, it would be wise to scale back the FAO projections to the 40-50 million m3 range.

On balance, Latin America does not pose the ominous threat to the B.C. forest sector that we have been warned about so often. Brazil has demonstrated genuine capability to sell bleached kraft pulp in our traditional European markets. At the same time, Chile will undoubtedly provide increased softwood products in our Pacific Rim marketing areas. However, considering the marked depletion of natural hardwood forests in Southeast Asia and in Latin America in recent years, this added supply of softwood will not likely cause a major restructuring of markets now held by North American producers.

AFRICA

The natural forests of Africa have been ravaged and are not a competitive threat in world markets. Plantations of softwood species are not plentiful. Half of these are in South Africa, which has a policy of self-sufficiency rather than exports.

At the present time, Africa accounts for less than 1% of world softwood production. Output is now less than 10 million m3 annually in the entire continent. The projection of 13 million m3 in 2000 is reasonable (Table IX). The region is included here only for completeness.

ASIA

In tropical Asia, hardwoods dominate the scene, both for natural forests and plantations. There are less than 1 million ha of softwood plantation in the entire region and over half of these are in Indonesia. Natural softwood forests cover around 8 million ha but these are mainly protection forests in the Himalayan belt and do not really count in estimates of industrial timber availability.

The outlook to the year 2000 was estimated by FAO at around 18 million m3 (Table IX). Given the fact that softwood harvests were around 5 million m3 in 1980, their volume in the year 2000 will be negligible in calculating market balances.

PEOPLE'S REPUBLIC OF CHINA

The progressive liquidation of the northern softwood forests in China has gone on since the 1930's. Major plantation efforts which have been implemented recently will not stave off a reduction by 30% or more in the harvest which had been running in the range of 16–20 million m^3 annually. This retrenchment in harvesting, together with new development and trade policies, has already resulted in important sales to China from this side of the Pacific. Further sales from B.C. are in prospect, provided we compete effectively with the U.S. west coast, Chile and New Zealand.

SUMMARY

The major finding of this analysis is that projections of softwood timber availability which we used uncritically a few short years back are now regarded as excessively optimistic. A projected 20 year increase of 385 million m^3 published by the FAO in 1982 should probably be reduced by half, and then followed up by a realistic examination which keeps economic and institutional constraints in the forefront of the analysis.

The second finding is that the quality specifications are bound to decline over the next 20 years, especially with regard to sawlogs. In fact, softwood supplies will be seriously strained in most producing regions. This will lead to real price increases for these products if the forecast demand increases of approximately 2% per annum are realistic.

Third, the issues facing the forest land managers today are not unique to this decade or this continent. Our competitors have their problems too. Nothing has been learned during this study which would add to the pervasive gloom which has infected so many in North America. On the contrary, there is reason for optimism in this overview of world softwood timber supply. Supply constraints, especially for sawlogs, are expected to become more widespread in most competing regions, new plantations notwithstanding. Plantations in other countries will not put us out of business.

IMPLICATIONS

I feel the implications of the foregoing to Canada's forest industry and to woodlot owners in B.C. are apparent:

1. First, the future for forest products in international markets looks bright. If the supply is available, markets will also be available, so don't be afraid to grow trees.

2. Second, the supply of high grade softwood dimension lumber is decreasing rapidly both in B.C. and in all other competing regions, so think in the long term and plan for the availability of these products. This means practicing more intensive forest management on your property, such as pruning and thinning, in order to grow the clear, large diameter trees required by the industry.

3. Third, our market share in Europe, the US and around the Pacific Rim may be threatened by plantation timber from New Zealand, Chile and the U.S. South in the years to come, but no products flowing from these areas can match the quality of our SPF lumber or our bleached Kraft pulp. Again, the implication is to be optimistic and to utilize your land for its highest and best use – growing forest products.

4. Finally, since prices for forest products are expected to rise on international markets woodlot owners can benefit financially provided that they receive a fair price for their timber from the industry in B.C. Therefore, woodlot owners and their associations should press for government sponsored regulations on the determination of these prices perhaps through the initiation of a marketing board system or a competitive log market for private woodlot timber.

CONCLUDING COMMENTS

In spite of the problems which face the forest community, not just in North America, but world wide, there is reason to be optimistic. The big problem is not cyclical markets, or a transitional timber supply, or plantations in other countries. On the contrary, it seems to me that the real problem in the forest sector today is a lack of vision. Genuine opportunity comes to many in periods of confusion and uncertainty. It is in such times that the instincts of the true entrepreneur should flourish. That cannot happen when our preoccupation with the short term is total, when we adopt the attitude that the government will always be there to save us from our own errors of judgement, or when we forget that the forest resource is our most valuable natural asset.

TABLE I
PAST AND PROJECTED INDUSTRIAL SOFTWOOD TIMBER SUPPLY
(million m^3 roundwood)

	1960	1970	1980	1990	2000
Canada	75.4	109.6	130.9	154.5	166.8

Source: FAO, Forestry Paper 29

TABLE II
US SOFTWOOD TIMBER SUPPLY: ACTUAL AND PROJECTED
(million m^3)

	1952	1976	2010
Pacific Coast	90.0	107.9	107.1
Rocky Mountain	11.0	21.5	33.1
North	19.2	17.5	31.1
South	82.7	118.4	191.7
Total	202.9	265.3	363.0

Source:
US Forest Service, Report No. 23, 1982 (adapted from Table 8.3)

TABLE III
PAST AND PROJECTED INDUSTRIAL SOFTWOOD TIMBER SUPPLY
(million m^3 roundwood)

	1960	1970	1980	1990	2000
United States	201.1	252.5	267.2	290.2	316.9

Source: FAO, Forestry Paper 29

TABLE IV
PAST AND PROJECTED INDUSTRIAL SOFTWOOD TIMBER SUPPLY
(million m^3 roundwood)

	1960	1970	1980	1990	2000
Europe :					
Nordic	66.0	92.4	96.3	103.4	112.2
France	11.1	14.1	15.3	17.2	19.5
W. Germany	13.0	17.2	21.8	24.3	26.5
U.K.	1.6	1.8	2.8	3.3	6.2
Other EEC	3.5	5.7	6.9	7.8	9.7
Other West Europe	21.2	30.2	39.0	47.5	58.1
Total:	116.4	161.3	182.1	203.5	232.2

Source: FAO, Forestry Paper 29.

TABLE V
RUSSIAN SOFTWOOD SUPPLY
(million m^3)

Year	Domestic Consumption: Sawlogs	Fiber	Exports	Total
1970	194.3	55.7	13.9	263.9
1980	204.7	67.6	11.6	283.9
1990	240.9	70.2	17.4	328.5
2000	272.1	90.3	35.4	397.8
Rate of Growth :				
1980 - 2000	1.4%	1.5%	5.7%	1.7%

Source: FAO, Forestry Report No. 29

TABLE VI
JAPAN'S DOMESTIC SUPPLY OF SOFTWOOD
(million m^3 roundwood)

Years	Forestry Agency of Japan	FAO Working Party
1960		34.4
1970		28.8
1976	21.4	
1980		26.0
1986	29.4	
1990		38.2
1996	46.1	
2000		49.6

Source: Forestry Agency of Japan and FAO Forestry Paper No. 29.

TABLE VII
PAST AND PROJECTED INDUSTRIAL SOFTWOOD TIMBER SUPPLY
(million m^3 roundwood)

	1960	1970	1980	1990	2000
Oceania	6.2	10.3	13.8	21.2	37.7

Source: FAO, Forestry Paper 29.

TABLE VIII
LATIN AMERICA SOFTWOOD SUPPLY
(million m^3)

Year	Sawlogs	Fiber logs	Total Supply
1970	13.3	3.98	17.2
1980	14.6	8.0	22.6
1990	17.1	21.4	38.5
2000	25.5	37.0	62.5

Source: Forestry Report No. 29, FAO

TABLE IX
PAST AND PROJECTED INDUSTRIAL SOFTWOOD TIMBER SUPPLY
(million m^3 roundwood).

	1960	1970	1980	1990	2000
Africa	2.4	5.2	7.2	10.8	15.0
Asia	2.6	4.2	4.9	8.0	18.3
China	23.0	30.5	41.3	50.6	62.5

Source: FAO, Forestry Paper 20.

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GROWING STOCK OF THE FUTURE

SUMMARY

Interest in the cultivation of hardwoods in the Peace River area is increasing as the commercial possibilities of using hard woods for fibre are being realized. While there are many areas of natural hardwood, particularly aspen, interest is now centering on the possibilities of short rotation tree fibre crops, grown in association with agricultural crops.

While much is known about the growing of aspen and cotton wood elsewhere, cultural techniques for short rotation crops have not been explored locally.

Further, little investigation has been carried out on the form of future crops, and the possibilities of integrating their cultivation with existing agricultural uses.

This discussion centers on selected aspects of future hard wood crops from the land owner's point of view. In particular, questions are posed as to landowner's objectives, what information is required, what can realistically be expected, and gaps in current information. The discussion ends with words of caution with respect to constraints on hardwood cultivation.

INTRODUCTION

When I was invited to talk about "Growing Stock of the Future", I was somewhat uncertain as to what I should include. There are many qualified people who know infinitely more about growing hardwoods in the northern Boreal forests than I do, and so after due consideration, I decided to confine myself to a discussion of what we actually want and what we might realistically expect.

To this end, I have divided my talk up into six broad areas. In each, I have posed questions and attempted answers, or at least indicated possibilities and options. The questions range over such topics as where we find ourselves at the moment, what we know, what we hope to achieve, various options available to us, what we might realistically expect, and finally, a number of constraints and areas where we should exercise caution and prudence. I have included a list of suggested readings for those of you who may wish to follow up on some of the points included in this discussion.

WHAT IS GROWING STOCK?

This is your armory - the biological tools available to you to produce a salable end product. When we discuss "growing stock of the future", this set of biological tools and their cultivation is of critically importance to the success of our economic well-being.

At the outset, we require an inventory of the trees that will grow in the locality (the names of the trees), their growing requirements (where they perform the best), their attributes (what they can be used for) and the constraints that apply to their cultivation. We require this information as our starting point. Although many alternatives may develop over the coming decades, we cannot afford to wait on the totally unknown and uncertain: information for the present time is required.

We also require knowledge of possible alternative crops for the locality, in order to assess their value with respect to alternatives, combination crops, changing markets, hedging our bets against natural disasters and so on.

In the Peace River country, there are only a selected few species that will grow successfully, and even fewer that are currently classed as commercial. The species currently classed as commercial are well documented. While this seminar has hardwoods as its primary focus, nothing should be dealt with in isolation and the coniferous associates of the hardwoods should also be considered, as should agricultural and recreational alternatives, and a combination of the above. In general terms, looking at long term site productivity, a sustained flow of products and economic health, diversity will be the key to success. While the tendency is to select one product because of economies of scale and ease of working, it has been demonstrated in the past that a diverse economy has major economic and social advantages over single resource industries. If we fail to observe the lessons of history, we are doomed to repeat the boom or bust system of the past.

One last point before proceeding with this discussion. It should be recognized that the underlying principles of silvicultural management are based on natural processes. As with farming, however, we use our knowledge of these natural processes to guide us in intensive forest management to produce a specific product, not rely on purely natural processes to do the job for us. If we do not observe the basic principles of growing trees, noting the requirements of each individual tree species as a unique biological organism, we will almost certainly fail in our growing endeavors. This is an underlying principle that should be closely followed in any forestry venture. By all means manipulate the forest, but within the tolerance of the system and occupant vegetation. I will repeat this axiom in a different way later in this talk.

WHAT DO WE WANT?

Although on the surface an easy question, when you get down to specifics, it is difficult to come up with precise answers. We can, however, make some generalizations, and then focus on selected points. The following are not

necessarily in order of priority, as each individual has his/her own view of their relative importance, but it will serve as a guide on selected aspects of future crops.

A uniform product.

Uniformity is a desirable feature of any mass production system, biological or mechanical. With respect to a tree crop, uniformity makes a system easy to inventory and manage, generally more salable because the product can be processed by a plant specializing in handling that one particular size and species, and each stage of stand tending can be made more efficient by using a machine that is just the right type and size, matched to the operation. We have effective economies of scale when a crop is uniform, even if the area in question is small. Our future growing crops should be uniform with respect to character, species, size, genetic make-up and stocking levels. You may detect a conflict and mixed message here as I have just finished advocating diversity. If we look at long term crops (i.e. 70 years or more), I am a firm advocate of mixed species stands as they tend to be ecologically more stable, and require less attention than do short rotation monocultures. However, when we discuss diversity, I refer to diversity over the entire management unit. This is particularly important if the grower does not own the processing facility.

A high "harvest index"

"Harvest index" is a term used to describe the amount of usable material in the tree at harvest time. If the entire tree can be used for the primary product, then we have a 100% harvest index. If we have to leave part of the tree on the ground, or sell part to merely cover costs, the percentage waste or underutilization detracts from this target. Our future crops will have a very high harvest index relative to today's forest stands. Not only will the stems in the stand be uniform, but with an increasing amount of "other material" (formerly harvesting debris - slash), uniform in size and properties, available for the processing sector, much of this material will be utilized. The price for the low grade material may not be great, but it will be used and we will see this material removed from the growing site, assisting with site preparation, improving the regeneration capabilities of sucker established crops, and bringing downstream employment benefits by using formerly wasted material.

Easily grown

The future crops will be easily grown, not merely because of their biological characteristics, but because of our knowledge of how to do it. For example, we already know the requirements for aspen sucker regeneration, and are able to carry this out. We know soil temperature requirements required to stimulate

growth processes, and how this is achieved. We know the general numbers of stems per unit area required to satisfactorily establish a healthy, vigorous crop, be it for pulpwood or sawlogs. Elsewhere, equipment has been developed to undertake virtually every operation in stand tending and harvesting. We do not have to re-invent the wheel, merely bring together the existing know-how. In part, that is what this meeting is all about. Thus we will see increasingly successful crop regeneration and highly effective stand tending. So we will follow simple procedures, modified to reflect local knowledge and experience.

Freedom from disease and defects.

Our future crops will be strong, healthy, vigorous, of consistently high quality and generally free of defects. Loss factors, while not becoming a thing of the past, will assume minor importance as time passes. This will come about as our "old growth", decadent and high graded stands disappear, and are replaced by young, uniform, and carefully managed stands. The key factor to remember here is that, as with successful agricultural crops, the new growing stock will be carefully tended, and we will develop a sense of "forest hygiene" or forest health. We do not expect a crop of wheat or herd of cattle to look after themselves, and should not expect a stand of trees to do the same. Certainly a crop of trees does not have to be looked at on a daily or even annual basis, but with the knowledge and predictive tools at our disposal, we know within very narrow time limits when certain treatment is required. No farmer would wittingly miss a top dressing, or stock inoculation, it would not make good business sense nor good husbandry. The same goes with a crop of trees. The result of treating a stand is not as immediately apparent as it is with an agricultural crop, but the benefits are there none the less. In forestry, as with agriculture, once a treatment window is missed, opportunities have passed, damage can result, and the product target will, in all probability, be missed.

Complementary to other uses

Agricultural crops, other forest resources such as wildlife, protective functions such as slope stability, can all be compilmentary uses with forest crops. Integration of other uses requires care, understanding and above all, planning. There are occasions when each resource requires isolation from other uses to permit development. During these critical times when a "crop" is sensitive to disruption, an area may become a "single use" zone, for a short time at least. Hence during the formation of a growing crop, cattle should be excluded or damage resulting in stem deformities will result. Excessive use by one user can create defects in another resource. So dumping more than a certain amount of waste in a river or overfishing by recreationists can deplete breeding stock, so overgrazing,

quality and quantity of harvestable material.

Retaining options.

A word of caution about putting all the eggs in one basket. In a long term venture such as growing trees, options should be kept open and viable alternatives planned. In this regard, growing trees provides options not available in agriculture. Even with short rotation crops (under twenty years), a stand requires a certain number of treatments. If planned from the outset, each treatment provides an opportunity to change direction with respect to the end product. For example, the future growing stock will be grown with a definite end product in mind e.g. pulp wood, sawlogs, but this may change during the time taken to reach maturity reflecting changes in market demands. As a general rule, it pays to keep slightly more trees on the ground than that required for the prescribed end product, so long as the stand is not over crowded to the point that competition slows down general growth rates. It is easy to remove trees from a stand, but virtually impossible in pioneer species such as aspen and cottonwood, to increase stem numbers once a stand has become established. Further, if we observe successional patterns in which the spruce follow the short lived hardwoods, it is prudent to permit spruce to occupy the understorey, and provide the option of changing species when the hardwoods are removed. In summary on this point, as noted previously, at each designated treatment, an assessment should be done to determine the validity of the desired end product. Changes can be made in direction as long as a crop is healthy, of good quality and uniform.

WHAT DO WE NEED TO KNOW?

The growing stock of the future will have to accommodate the chance of changing markets, and here we identify a major consideration - the need to be able to change the end product in mid-stream. This is not a new approach, although it does identify a constraint under which we are going to operate in a relatively long term venture vis a vis agriculture When growing a crop of trees, at each treatment point, regardless of whether the crop is coniferous or hardwoods, a decision has to be made as to the required form of crop to reach an acceptable end result. Remember that the species is already determined once a crop has been established, so it is the form of the crop that becomes important.

So we need to know the following:

In general terms -

- What is the projected market when I plan to harvest this crop?

- Will this achieve my financial expectations?

- Is the crop of trees on target to achieve the correct size, type and form?

- When is the next time I have to ask these same questions?

- Are my plans for the following rotation or land use still realistic?

- What can I do to improve the financial returns of this crop?

- What would I do differently if I could go back and start again

Specifically -

- What have I got right now (stands and sites)

- What do I want to do (produce)

- Should what I have be retained or should it be ripped out and replaced (economic assessment)

- What species and systems are available to me if I want to change (silvics and silviculture).

- How do I do the job (techniques, operations and planning)

- What are the options, alternatives and complimentary uses (integrated management)

WHAT CAN WE REALISTICALLY EXPECT?

The "new" forests in the boreal region can, and should, produce three times more than at the present on a sustained basis without lowering site productivity. This means in terms of fibre, we can realistically expect to produce three cubic meters per hectare per annum. This has been exceeded in other parts of the world in similar climates, and there is no reason to expect that this figure cannot be achieved here.

The growing stock of the future will yield a variety of products and with the land base available in this region, there is every possibility of a large, diverse industrial base, as opposed to one or two major outlets found at the present time. It goes without saying that this will not happen overnight, nor will this situation appear magically. For one thing, no industrial plant will appear without an assured, sustainable, long term supply of the raw material. We cannot realistically expect an immediate, ready market for all of the products from our new generation of young plantations. There will be a "transition" time during which there will be inefficiencies in raw material use, surpluses and low prices.

WHAT DON'T WE KNOW?

If we knew the answer to this, we could immediately focus our research resources and come up with set of answers. Often we do not know what we don't know, and hence we have a dilemma. We can, however, function quite effectively in the face of a degree of uncertainty. Many of us have been operating under these circumstances quite successfully for our entire lives. We call it taking calculated risks, using judgment, extending our experience from one situation to another and so on. Due to the long time frame required to grow a crop of trees, and the traditionally low price offered to the grower, we have to realistically exercise caution. The following are areas where caution might usefully be observed:

Do not put all the eggs in one basket. For example, I would not advise growing all our new crops for pulp wood, nor space the stands at an early age to sawlog production specifications. I noted earlier that the end product should be reviewed at each treatment point, and that the option to change be retained. A little conservatism should be exercised. I recognize that a decision must be taken or no treatment would every be carried out. However, drastic, ill-considered stand treatment based on poorly researched information or inadequate silvicultural knowledge will bring nothing but disaster. Forestry is a science, requiring carefully planned operations, carried out at the correct time.

Beware of the "new wine". This follows directly from the point above. While a new industry may appear attractive on the surface, with short term economic benefits and immediate financial returns, beware of being locked in to a low return fibre crop. Similarly, new genetic material (tree species) developed elsewhere will appear. After all, a new breed of poplar can be produced in about five years, but we would not know if it is climatically adapted until a complete climatic cycle of some 35 or so years has passed. The reason for long term genetic trials is to test the suitability and the adaptive capabilities of a new species. A strain of poplar developed from clones originating in the Southern States may outperform any local clone, but only time will tell whether or not it is truly adapted to the vagaries of the local climate or biological hazards. In this respect, care should be taken not to dilute the local gene pool, introducing traits unsuitable to an area. We could introduce a time bomb that could take many years to explode.

Take predictions with a pinch of salt, particularly research findings based on a small population or trial. The results may be directly applicable to operational and extensive workings, but in my experience, I have never been able to totally duplicate research findings on a large scale. There are all manner of factors that can interfere with results. For example, ground irregularities with minor fluctuations in water tables

may drastically influence growth and yield projections. Remember that research is necessarily carried out on areas selected for uniformity and lack of irregularities which might confound the result.

FILLING INFORMATION GAPS.

The usual call is for more research and I agree that a continuing research effort is required. However, on an operational basis, we require large scale operational trials to show the "what if" situations. We know in general terms what will happen if we follow certain courses of action, but the small-scale operator cannot afford the time or resources to invest in operational trials. I would not discourage anyone from trying "something", no matter how crazy it might appear on the surface. However, such small examples are no substitute for large scale demonstrations. By large scale, I mean areas of several hundred hectares under one management regime. At least it would make the researchers and upper level management put their advice and direction on the line.

On a practical level, there is considerable information already available that could be dispensed through field workshops given by an extension service. While workshops and seminars of the type we are currently attending are a useful medium, there is no substitute for on-site practical advice.

We have little information on the behavior of stands of mixed hardwoods. We know that under certain circumstances, mixtures are beneficial to both species (e.g. Douglas-fir and western red cedar), but with respect to aspen and cottonwood, we do not know whether they should be grown in pure or mixed stands to optimize production.

A further tool that is available to foresters in the south, but not yet available for hardwoods in the northern forests is a stand density management diagram. This simple devise, based on a universal growth model, shows how many stems of a certain diameter can be carried on a piece of ground. With height curves added, the entire stand treatment can be planned, including when options are available to change, canopy closure, estimates of competition and limits of carrying capacity. When these tools are available for our hardwoods (there is already one for red alder), we will have a dynamic management tool available to us.

DISCUSSION

If we look at experience elsewhere in the world, in particular northern Scandinavian, we observe that forest crops are grown that reflect the site rather than the market. Because virtually the entire land base is intensively utilized (i.e. there is no "waste" land as such), and there is a generally even flow of a variety of forest and agricultural products. Because of the availability of raw material, there are processing industries. Further, the growers, through co-operative associations, have exercised leadership in promoting the use of raw material, encouraging association members to invest in processing plants and marketing.

The land locally has far greater production potential than northern Scandinavian where an average of 3.6 cubic meters per hectare per annum is produced.** Much of this land is privately owned and managed. While we can rarely duplicate working methods due to cultural differences (e.g. B.C. restrictions on Woodlot Licenses), in Finland we can see a living example of co-operative effort and clearly defined objectives.

The focus of this seminar is hardwoods, in particular rapidly growing hardwoods and we have heard a number of talks about market possibilities, categories, specifications and the like. We also want to make the entire enterprise financially rewarding. Further, we do not want to lock ourselves into some activity that will tie us to some inflexible market and open the possibility of "blackmail". Nothing can be done without clearly defined objectives and goals, so before addressing what we need to know, let us decide what we want to achieve i.e. the end result. I have indicated a few general possibilities and personal thoughts on future growing crops.

My closing comment is one of optimism. With the vast areas of currently under-utilized land in the Peace River country, there is a potential for a thriving, diverse economy based on the integration of forestry and agriculture. While the limitations of integrating the two industries must be faced, and the requirements of both accommodated, there is room for both under either single or joint ownership. The major constraint in implementing any integrated farm/forestry program is not lack of research or information, but foresight and planning. The crops of the future will present an orderly, cultivated appearance, and will be developed from both local and introduced stock, but above all, will be intensively managed and grown as a crop rather than left, as in the past, to fend for themselves.

** Source. Yearbook of Forest Statistics - Finnish Forest Research Institute, Helsinki 1987

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(transcribed from oral presentation)

DIVERSIFICATION INTO GAME RANCHING

I'm not too sure myself, listening to all the speakers today, I think I've learned a lot. We've heard a lot about growing trees. I'm not sure as an active rancher, that I got more questions answered today, or whether I'm going to go home with even more questions.

I think there has to be a lot of work done on what was said here today. For those of us who are active in agriculture, I can't see anybody running home and planting a whole bunch of aspen trees, but I do think it's something worth looking at. I think our forestry people and our agriculture people have a lot of extension work to do and answer some of those questions for us. That's just a few comments, my own personal comments on my impressions so far today.

So, we can't all go home and plant aspen trees, we need to look at some other forms of diversification. I don't think I have to tell anybody here who is actively involved in agriculture that we've got lots of problems in the agriculture industry, not only the Peace River Area, but all over North America, and probably more generally all over the world. Some of our problems are, I suppose, environmentally caused by weather conditions; some of them are caused by world markets; but more importantly, a lot of them are caused by ourselves. We seem to get too caught up in putting the blame for a lot of our problems on every other place except where it should be. We're always quick to blame the government, it should do this, and it should do that. We're always quick to blame the banks, cause they loaned us too much money. We're really quick to blame everybody and everything, except where the blame should lie, and that's within ourselves.

I learned a long time ago that if I had a problem, and I want a solution to it, there is only one place to look and that was within myself. If I'd have been so wrapped up in trying to put the blame for that problem on somebody or something else, I'd never find a solution. Sometimes it's hard to do, and I've had difficulty may times doing that.

I think that in agriculture today, more than in the past, we have to look to the future. Things are changing awfully fast in the last fifteen years, in the years of the computer. Someone made a comparison yesterday, perhaps it was Charlie Lasser, that we are in a second phase of rapid change. The world is changing, our lifestyle is changing, our habits are changing, and those of us in agriculture who are producing food, need to change with those changes or we aren't going to be here. It's going to be those people who aren't all wrapped up in what happened yesterday, or how their father did it, or how they did it twenty-five years ago, but who look at what things are going to be like ten years down the road, and plan for it. There is no use sitting and waiting

for it to happen and then try to get ready. We've got to be aware of what's happening. We've got to be more aware of what's happening today in our society, than we ever were. Yesterday is history and we can't do anything about that, but we can do something about tomorrow and the future. We've got to be able to look into the future to be able to do something about it.

If we're going to be able to produce a food product that we'll be able to sell, we've got to produce a product that there is a market for. A lot of the products that we're producing now, there is no market for--I shouldn't say "no market", but the market is poor and the prices are depressed. So, I think we have to look into the future to decide what there will be a market for five years down the road, or ten years, or next year. Also, I think we have got to be producing a product that works well within the environment in which we are trying to produce it.

There is one problem I would like to mention as an "outsider"--I haven't been here all that many years as I was born and raised on a mixed farm in southern Manitoba and spent my life on the Prairies before I came here. That first fall I was here in 1971, it snowed and here is all this grain out. There's swaths laying under the snow, there is standing grain and I'd never seen this before. I didn't know things like that happened. You drive around the country and piles of grain--tens of thousands of bushels--in any stage of deterioration, and I just scratched my head. I just couldn't figure this out. Everybody has a grain dryer. I didn't know there was such a thing as a grain dryer until I came here. Probably two thirds of the years since I've been here, some percentage of the crop is out over the winter. And I keep asking myself, why do people keep growing grain year after year, when we have poor harvest weather? Why aren't we looking at some other type of grain or crops that we could be growing? This is great country for growing grass. When I first decided to come up here, people said what do you want to go up into that godforsaken country for, you'll never raise cattle up there.

I was pretty quick to realize that this is one of the best livestock areas I've ever seen, not just in Canada, but in the United States also. We've got a lot of things going for us up here. We've got a constant climate without extremes, we don't have a lot of insects, our winters aren't bad, and we can produce grass. This Peace River Area has a lot more potential than we are making use of. We've got to diversify more and get into growing crops and produce which are compatible with the environment in which we are growing. I see mixed farming, more livestock industry. For example, I don't know how many times I've seen people trying to combine barley, sitting at 18% moisture, and it will be beautiful sunshiny weather. It will stay there for weeks, but it never gets drier. It is beautiful high moisture feed for hogs or cattle. So those are some of the things that I see.

Seed crops are another thing. A crop of grass seed works beautifully with a livestock operation. You take your seed crop off, you've got your aftermath behind the combine you can bale up for winter feed, you got the regrowth of grass for pasture in the fall. So you're making double utilization of it.

Just talking about grass seeds, I know everyone has heard about the reindeer industry that we're working on. Two weeks ago we had a chap here from Greenland, I guess you'd call him a reindeer consultant. They have a college over there that people go to where they are trained to be reindeer managers.

I had the opportunity to spend an afternoon and evening with him, and asked him many questions. One of the questions was about nutrition, what are these animals going to eat. I mentioned fescue grass to him, and he didn't know what I was talking about. I saw a fescue field down the road, so I stopped and we walked out and he looked at it, down on his hands and knees, and said that would be beautiful winter pasture for reindeer. There we have direct certification to get this reindeer thing going.

I'm ranching buffalo, as most of you know. That's diversification. I'm very, very happy with it. It has a future, a very good future. The markets are meat markets, which are at least ten years ahead of our supply. In other words, we could just sell all we can grow, and more, and getting a good price for it. And we're producing a product that is desirable to the consuming public, and there again it's a case of looking into the future. As we change our lifestyle, we have to change what we produce.

I see game ranching or farming being just a helluva industry for this area. This could be the game farming capital of the world. It will certainly help turn the agriculture community around, and there are many other forms of diversification. Our next speaker is going to get into those. Through our conversations over this reindeer thing, the possibilities are endless.

The Saskatoon industry, is active down around Beaverlodge and Grande Prairie. They are growing Saskatoons and producing wine. The things that we can diversify into are only limited by a person's imagination. But to get back to what I said earlier, if we're going to be all wrapped up in blaming our woes on somebody, and something else, we're never going to solve our problems.

A friend of mine, for example, only has a quarter section, he isn't an active rancher, has started a hackles farm, and he raises exotic birds, butchers them, capes them and sells the capes for tying fish flies. You probably have seen his display in the mall. He is not making a lot of money, but it's a form of diversification, and he is getting double utilization out of that bird: He sells the feathers and he still gets to eat the bird. And, incidentally, I also have some wild turkeys out there and Tom gets my wing feathers and the tail feathers are worth $20 to $25. Just for the wing feathers and the tail feathers and you can't get enough of them. You still have the bird to eat. So we have to use our imaginations and don't be scared to try something just because nobody else has done it. Those are usually the people that are big winners. The people that get out, use their initiative, use their imaginations and their energy and try something new.

I suppose I shouldn't wrap this up without tying this somehow into aspen production, seeing how this is forestry related culture. I couldn't agree more, that we should be planting more of this country back to bush again. I think one of the reasons that it's been dry a lot in this area, is due to the fact that we've cut down so much forest in the Peace River area. In the 30's when the Prairies dried out the people that lived here tell me that there was lots of rain. This time during the drought we're feeling the effects, and I think probably that's largely due to all the forest that's been removed. So maybe we should be looking at replacing some of that forest, and, of course, when you replace the forest you help the wildlife and I mentioned this to a couple of forestry people here today.

Something I personally would like to see is the forestry people and the agricultural people work together on private land. Agricultural land has as much to do with agriculture people as with the forestry people. I would like very much to see them initiate a project in this area, in the Peace River area someplace, as a multiple use piece of ground. And I'm not talking about 10 acres, it's got to be something that can relate realistically to the average ranch, i would think something like a half section or more. Look at what can be done. I think the money would be far better spent on this type of thing, research and extension work, then it would be on handing out a bunch of grants to people. Because something like this would help everybody! It's like this meeting today, which is sponsored by the Canadian Forestry Service, and really helps everybody. So I would certainly challenge them to take a long hard look at this. There was a lot of encouragement from the forest people here today to get the agriculture people to diversify. So I would like to say maybe it's a case of putting their money where their mouth is, and do some research. See what can be done. I can visualize game ranching, game farming being one area where we could utilize aspen production and grazing of game animals on the very same parcel of land. It would have to be managed properly, it would be an intensive, and extensive operation. I can visualize that happening.

I know my buffalo just chew the hell out of red willows, but you hardly ever see a tooth mark on an aspen. The reindeer, from the information that I could get from this fellow in Greenland, they really like red willow. We'd be driving down the road and everytime we'd come to a patch of red willows in the field, he'd say, "That would really be good for reindeer." I asked him what they would do to aspen, he was not positive, but didn't think they would bother them. They like the red willows.

Those are some of my thoughts. The biggest thing I see from stopping us from doing more of it is the price for a finished product. As an active rancher, until I can see where I can see that I can make some money growing a product, I'm not going to grow it. The price we're getting for aspen now, you can't even afford to harvest it, let alone get anything for your resource.

Henry Litzenberger
Manager
Ventures Corporation
Fort St. John, BC

(transcribed from oral presentation)

DIVERSIFICATION: ANTICIPATE AND REACT

I want to give you a brief explanation of what Ventures Corporation is: Peace Liard Employment Development Association is a non-profit society which owns Peace Liard Ventures Corporation, which is a profit making corporation. Wouldn't you like to be able to incorporate that way, you don't pay taxes, you don't pay for the inventory on the shelf, very comfortable. Our obligation at Ventures Corporation is to advise local business in a technical way, also to help fund local business that cannot find funding elsewhere. Decisions are made by a local board of directors, and I can assure you that my board of directors, eleven people who live in the Peace Liard Regional District, are dedicated people, who put a lot of time and effort into it and certainly have your interests in mind. Because of our endeavors, I have, I guess, about the most exciting job around.

Basically, we're creating employment, and I know we're doing well there because I get a pay check every two weeks. Above that, we have over a million dollars on our books, investment money, we funded some 60 businesses in the area and we've created a significant impact on the local economy. The cost of creating a job through Ventures Corporation is $1061. We get that back in five weeks by taking a person off social assistance or UIC and getting them into a position where they are contributing to our taxation system.

The last two and one-half years we have made employment possible for twice as many people as are now employed at Louisiana-Pacific and will be employed at Fibreco.

My directors are very interested in diversification, whether it be agriculture, forestry, service, retail,--it's diversification. We feel it's the key to it. In the forest industry, it was fine to have Louisiana-Pacific come along, they were funded in some partly by their own money, tax payers' dollars, whatever, but they also needed some support in the background. The fellow who had a truck in his backyard, no licence, no gas, no insurance, he was the fellow we dealt with. We funded about 16 organizations in the back, who are delivering their product to Louisiana-Pacific.

We were approached on fox farming about three years ago. The person had gone to the bank, and the bank literally laughed at him. He approached us, we looked at it, did some research, and said, "Hey, we can do something with this." We'd arranged funding for him, we didn't put our money into it, we didn't have to. We took it to another bank, they checked with some of their branches and managers in the east where fox farming is very successful. He got his funding. Today we have some 62 fox farmers in the area, generating

$3,500,000 worth of revenue in the area. Some of these 62 people were in dire straits two or three years ago, today they are successful and running an operation which, in two cases, is in excess of one-quarter of a million. That's diversification.

I think we'll talk about buffalo. Bill doesn't get enough credit for what he does. He started with a small herd, had a lot of problems, set the guidelines, at the time Bill went into it you couldn't get money for buffalo. Today you can go to the FCC, bankers are aware of it, and that's diversification. I think we've got over three thousand head in the Peace River Area alone. Something we didn't have a few years ago generating income. There's a market out there for that product. I could go on and on.

What I prefer to do is create an actual situation that we're going through now. It has to do with eggs, chicken eggs. But I could just as easily talk about wood products, suishu boards, gravestone markers, or chopsticks. We could talk about dimensional lumber or whatever. In the agricultural area, we can talk about reindeer antlers and venison, hides, etc. and so many other things in agriculture. But, I think this will best identify what I'm trying to say. When I say eggs, you can plug in aspen if you like or whatever. Generally every product will go through a research period.

We now know that diversification is a result of anticipation, diversification is a result of reaction. You've got to anticipate what that market out there will need in the future, and then you've got to react to it. Through the reindeer situation we've run into the massive market of the Orient and I'm not going to talk about all of the Orient, I'm going to use Hong Kong as the market profile. There's over six million people living in Hong Kong, the area of Hong Kong is smaller than most of your farms, in a fraction of some of the land holdings represented in this crowd. It's less than 150 square miles and only about 22 of that is occupied, the other is rock. You can't grow anything in Hong Kong. I shouldn't say, you can't, as they do grow a few flowers on rooftops, so they'll have flowers for the hotel lobby, but that's the extent of agriculture in Hong Kong. Six million people, a quarter of the population of Canada, living in a area that is probably smaller than some school yards in this country. One complex of buildings seventy stories tall, three buildings will house twice the population of Fort St. John. And some of these things, I'm trying to let them sink in so you can try to understand what that market is all about. The average family in Hong Kong who lives in 450 square feet, three and a half people in 450 square feet. I think as Canadians we live a different lifestyle. They've never seen a 48 inch bed let alone a queen or king size. They have 39 inch beds. They don't have refrigeration, not because they can't afford it, it's not their lifestyle.

Land is costly $ 25,000 / square ft so they eliminate the kitchen and eat in restaurants. Their demand for food is totally from other areas basically Thailand, Australia, and New Zealand. Now you can see why the five largest exporting nations in the world gained that position: USA, Canada, because of the massive capabilities we have. Thailand, Australia, New Zealand because of the demand, the massive populations they have to feed. Fifty-two percent of the population of Hong Kong is under 25 years old. They expect their population to increase by about 6 percent a year for the next eight years. They will have an additional three million people to feed eight years down the road. Most people react to situations, but the eastern world anticipate and

plan for it. We as Canadians sometimes don't look a week ahead, or a month ahead, the Hong Kongese look generations ahead. My involvement with three of the largest trading companies in Hong Kong have brought very important things to my mind. The most important is that they are looking elsewhere for product, they need it. Some of the predictions I've seen and some of the negotiations that are going on suit this area. We've got an infrastructure in place and we've got enough talent available, and we've got cheap land. We've just got everything necessary to bake the successful cake of agriculture.

Hong Kong indicates, and I have a letter of intent for supply of a hundred and fifty thousand dozen eggs a day. Two million eggs a day is what they need a year and a half down the road. People say, "How are you going to get them there?" Well we've got an airport here that will fly them out the biggest planes available with a small expenditure and extension of that runway, we can supply that market better than Vancouver because we're two and one half hours closer to Hong Kong, fifteen hours turn around time to Hong Kong, so we can deliver day old eggs to Hong Kong. They are getting them from New Zealand and China now on a 42 hour turn around time, so you can see you can deliver better eggs, fresher eggs at not much difference in cost.

To give you some idea how much room is needed for two million eggs a day, if you have a 1600 square foot home with an eight foot ceiling, you can just squeeze in 2 million eggs. And you can put a whole years supply in that house, eggs aren't weighty and they aren't bulky. The preliminary negotiations we've had with CP Air and Air Canada and the Canadian Transport Commission indicate that we can enter the Asian Market from Fort St. John at a nominal cost. The cost of air -freighting eggs to Tokyo would be less than 1/8th of a cent per egg, I think the market can bear that when they are in short supply. O.K. we've got Hong Kong half of their breakfast there.

They will need 30,000 hogs a day in a year and a half. These big volumes we're talking up, the capacity to raise hens, chickens, hogs in the Orient is rapidly turning to benefit us. We've got the excess feed for them, feed is costly in that area. We're competing, we're able to compete now, and I've discussed this with egg producers and hog producers. We can compete with what price they're paying now.

They need ten thousand squab a week. What is a squab? It's a baby pigeon. From hatching to table is 37 days. I see a lot of old barns out here that can raise baby pigeons, and they'll pay $5.50 per squab f.o.b. Fort St. John for ten thousand a week. I could go on and on.

I use this illustration to tell you diversification is the result of anticipation. We can anticipate that market is available to us, but we're not producing to our capability. Whether it's forestry products or agriculture, we've got a tremendous future ahead of us. The chicken and hog thing is being worked on I can assure you, very actively. Negotiations for vension for forty thousand carcasses a year. That market is real, there is a demand from Europe as well as Asia. We're in the fortunate position of having the infrastructure in place, we've got the talent in place, we've got the cheap land in place, we've got adequate water. We don't have any serious problems, the problems we have are physical problems of extending runways, and of getting enough trucks in here and getting a deck loader so we can get those airplanes loaded. It's not going to be an order one day for fifty-four thousand dozen, it's going to

start with ten or twenty or two thousand dozen, but the eventual output in replacement is one hundred and fifty-four thousand dozen. The total market is much larger. I just wanted to give you a brief outline in that regard. Diversification of product and diversification of market are two different things. We have to diversify our product to meet the needs of a market that is diversifying. We're not creating a market there, it's ready to be handled, and I'm sure this area will and can handle it.

SUMMATION

I noted in my closing remarks yesterday at Dawson Creek that we are in a period of rapid change.

Charlie Lasser returned to the podium to give us the benefit of his many years in the development of both agriculture and forestry enterprises.

Eli Framst gave us a vivid insight into the early days of the Peace River Agriculture, and LeVerne Merkel, a concise, but comprehensive background of forestry activities in both government and private, non-industrial sectors.

Wayne Thorp and Bob Clarke gave us a brief industrial perspective, and indicated quite clearly the dilemma arising from declining roundwood supplies against a background of increasingly efficient processing plants.

Arthur Hadland and Jim Pearson gave a detailed analysis of small-scale agricultural and forestry operations in the Peace River and what economic analyses should/could be used to evaluate operations.

After lunch, Ray Fautley and Jim Johnston from Prince Albert gave us a different Canadian perspective from the central part of Canada. It would appear from their comments that they face somewhat similar hardwood utilization challenges as we do.

We are very fortunate to have Mr. Peter DeMarsh, the President of the Federation of New Brunswick Woodlot Owners Association, here today. He gave us a strong and clear message on the benefits of co-ordinated and co-operative action to secure fair pricing and he also indicated that we should continually strive for equitable returns for our resources.

Competition from the international scene was well described by Ian Taviss, who indicated possible serious shortfalls in fibre production in virtually every softwood producing country.

Looking ahead, Peter Sanders gave us a broad picture of how our future stands should appear, and indicated that we should exercise caution before rapidly embracing new, but as yet untried genetically improved stock.

Bill Bickford then gave us a clear personal statement on the values of diversification and provided valuable examples of how, in part, this could be achieved.

Henry Litzenberger of the Peace Liard Venture Corporation gave us an impression and a visionary view of what we may expect in the future economic development in the Peace River Region.

Finally, the panel received a number of challenging questions that stimulated discussion. I hope you have enjoyed and directly benefited from participating in this workshop/symposium.

I would like once more to acknowledge the sponsorship and funding support of the Canadian Forestry Service.

APPENDICES

HOUSE OF COMMONS

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OTTAWA, April 8, 1988.

Mr. Hans Scholz, RPF,
Project Manager,
Northern Lights College,
11401 - 8th Street,
DAWSON CREEK, B.C.
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Dear Mr. Scholz:

Thank you for your letter dated March 28, 1988, inviting me to attend an information seminar to be presented by the Northern Lights College on "Forestry or Agriculture: A Case for Diversification" scheduled for April 29 - 30th.

I sincerely regret that due to previous commitments, I am unable to participate in the seminar. I would appreciate were you to take a moment to extend my warmest welcome to all participants attending this most informative event.

Once again, thank you for your thoughtful invitation.

Sincerely,

Frank Oberle, P.C., M.P.,
Prince George-Peace River.

Province of
British Columbia
LEGISLATIVE ASSEMBLY

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April 23, 1988

Northern Lights College
c/o Hans Scholz

Dear Mr. Scholz:

I regret very much being unable to attend the Seminar today.

As you are aware, I believe that Forestry and Agriculture can have compatible and complementary land uses. I am happy to see the subject being studied.

I know those attending will find the information and the case made for diversification interesting and the practical application worth serious consideration.

My best wishes to all for a successful day.

Sincerely,

A.J. Brummet, M.L.A.
North Peace River

Appendix 3

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Ray Graff
John Gray
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Eric Gunderson
J.B. Peter Haagsman
Kenneth Hall
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David Hanna
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